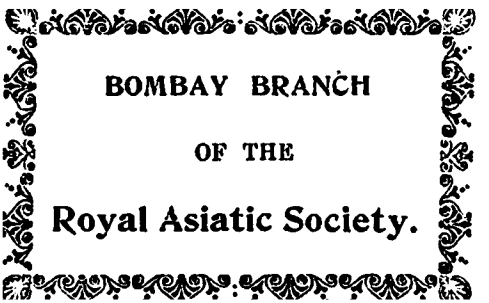

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ASSISTED BY ALFRED E. T. WATSON

FISHING

(*PIKE AND OTHER COARSE FISH*)

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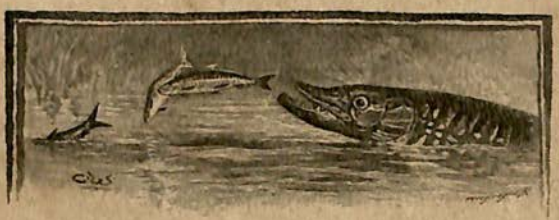
LATE HER MAJESTY'S INSPECTOR OF SEA FISHERIES
AUTHOR OF 'THE MODERN PRACTICAL ANGLER'
AND OTHER WORKS

WITH CONTRIBUTIONS FROM OTHER AUTHORS

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PIKE AND OTHER COARSE FISH

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WITH NUMEROUS ILLUSTRATIONS

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DEDICATION

TO

H.R.H. THE PRINCE OF WALES.

BADMINTON: *October* 1885.

HAVING received permission to dedicate these volumes, the BADMINTON LIBRARY of SPORTS and PASTIMES, to HIS ROYAL HIGHNESS THE PRINCE OF WALES, I do so feeling that I am dedicating them to one of the best and keenest sportsmen of our time. I can say, from personal observation, that there is no man who can extricate himself from a bustling and pushing crowd of horsemen, when a fox breaks covert, more dexterously and quickly than His Royal Highness; and that when hounds run hard over a big country, no man can take a line of his own and live with them better. Also, when the wind has been blowing hard, often have I seen His Royal Highness knocking over driven grouse and partridges and high-rocketing pheasants in first-rate

workmanlike style. He is held to be a good yachtsman, and as Commodore of the Royal Yacht Squadron is looked up to by those who love that pleasant and exhilarating pastime. His encouragement of racing is well known, and his attendance at the University, Public School, and other important Matches testifies to his being, like most English gentlemen, fond of all manly sports. I consider it a great privilege to be allowed to dedicate these volumes to so eminent a sportsman as His Royal Highness the Prince of Wales, and I do so with sincere feelings of respect and esteem and loyal devotion.

BEAUFORT.

PREFACE.

A FEW LINES only are necessary to explain the object with which these volumes are put forth. There is no modern encyclopædia to which the inexperienced man, who seeks guidance in the practice of the various British Sports and Pastimes, can turn for information. Some books there are on Hunting, some on Racing, some on Lawn Tennis, some on Fishing, and so on; but one Library, or succession of volumes, which treats of the Sports and Pastimes indulged in by Englishmen—and women—is wanting. The Badminton Library is offered to supply the want. Of the imperfections which must be found in the execution of such a design we are conscious. Experts often differ. But this we may say, that those who are seeking for knowledge on any of the subjects dealt with will find the results of many years' experience written by men who are in every case adepts at the Sport or Pastime of which they write. It is to

point the way to success to those who are ignorant of the sciences they aspire to master, and who have no friend to help or coach them, that these volumes are written.

To those who have worked hard to place simply and clearly before the reader that which he will find within, the best thanks of the Editor are due. That it has been no slight labour to supervise all that has been written he must acknowledge ; but it has been a labour of love, and very much lightened by the courtesy of the Publisher, by the unflinching, indefatigable assistance of the Sub-Editor, and by the intelligent and able arrangement of each subject by the various writers, who are so thoroughly masters of the subjects of which they treat. The reward we all hope to reap is that our work may prove useful to this and future generations.

THE EDITOR.

PREFATORY NOTE.

(BY THE AUTHOR.)

PROBABLY few persons who visited the late International Fisheries Exhibition in South Kensington could fail to have been struck by the multiplicity, and, to the uninitiated, complexity of the engines and appliances used in the capture of fish. The observation applies even more to the 'angler'—a generic term that I have a special objection to, by the way, but let us say to the fisherman who uses a rod—than to the 'fisherman' proper, whose weapons are net and hand-line, and who 'occupies his business in great waters.'

In consequence of the growing artfulness of man or of fish, or both, angling has come to be nearly as wide a field for the specialist as doctoring. Each different branch has its own professors, practitioners, and students; and its gospel as preached by apostles, differing often widely from one another, and perhaps eventually breaking away altogether from old tradition and founding a cult of their own. Thus the late Mr. W. C. Stewart, a lawyer of Edinburgh and a 'famous fisher' of the North, may probably be called the apostle of up-stream fly-

fishing, as contrasted with the time-honoured plan of fishing 'down:' fishing, that is, with the flies below rather than above the angler's stand-point. Not that I mean to assert that Mr. Stewart was by any means the first to preach the new doctrine, still less the first to practise it, but that he was the first to 'formularise' it, to give it consistency and shape, and to bring it prominently before the angling world. . . . And even then—and it is a good illustration of the 'specialism' referred to—his book was (statedly) confined to *one* branch of *one* kind of angling for *one* species of fish: 'The Art of Trout Fishing, more particularly applied to Clear Water.' It might have been added 'and in streams and rivers north of the Tweed,' for I believe there is not a word in the book about the rivers or lakes of England, Ireland, or Wales, or how to catch trout in them. I say this in no disparagement of the author or his capital book, but only to illustrate the complexity and 'elaborateness' at which the art of angling has arrived. So far from disparaging, it is probable, on the contrary, that if all writers on fishing had the modesty to confine themselves, as Mr. Stewart did, to subjects they were really personally acquainted with, the gentle art would not be afflicted with a literature containing a greater amount of undiluted bosh—to say nothing of downright 'cribbing'—than probably any printed matter of equal bulk in existence. We want a few more 'Gilbert Whites of Selborne' amongst our angling authors. . . . Poor Stewart! he was a fine fisherman and a right good companion, and pleasant days we fly-fished side by side, with

another famous angler (and politician), alas! no more—the Johnson of Scotland, as he was well called—I mean Alex. Russel, Editor of the *Scotsman*, and author of the book of 'The Salmon.' He and Stewart were two of the finest fishermen that it has ever been my lot to know, and I loved them both well—for 'like and difference,' as Mrs. Browning puts it—though Stewart was very wroth with me afterwards and devoted a whole pamphlet to my annihilation, pugnacious 'moss-trooping Scot' as he was. . . . No reason that, however, why I should not write his epitaph in the *Field* when he died . . .

> I'd give the lands of Deloraine
> Stout Musgrave were alive again! . . .

But, some one asks 'Why do you not practise what you preach? You eulogise monographs, and you write books yourself which embrace every variety of angling and "fishey lore" from bait-breeding to salmon-catching.'

Dear critic (forgive the adjective when perhaps you are in the very act of sharpening your 'scalping-knife'), I do nothing of the sort; and though it is true I have 'graduated' in most kinds of fishing, from sticklebacks upwards, there are many subjects germane to angling, such as fish-rearing—both of *Salmonidæ* and 'coarse' fish—fish-acclimatisation, and several special departments of angling itself, where I have need to learn rather than to pretend to teach. Consequently I have thought myself fortunate to be able to secure for these

pages the very kind assistance of the eminent and scientific gentlemen who write in regard to such special subjects with equal felicitousness and authority. Thus the volumes of the Badminton Library confided to me by the Editor and publishers will not lose either in completeness or trustworthiness by my shortcomings.

Frankly, however, this is *not* the reason why I have sought the able co-operation of Major John P. Traherne, Mr. Henry R. Francis, and Mr. H. S. Hall, in dealing with the theory and practice of artificial fly-fishing. The reason is that in some of my former writings I have put forward certain opinions on these subjects which if not 'revolutionary,' may certainly be called in one sense 'radical,' and which have not as yet found general acceptance amongst fly-fishers.

Whether the said opinions are right or wrong matters not. If I had seen any sufficient reason to alter them —at any rate in regard to their main outlines—I should have unhesitatingly avowed it long ago, for I look upon a man who says that he never changes his mind as an ass, or else as sacrificing truth to 'consistency;' but whatever my theories, and whatever may be their ultimate fate, I had, of course, no right or desire to air my hobbies in the pages of the Badminton Library; and I am sure that my readers will, in any case, be the gainers by the substitution of the admirable essays alluded to, written as they are by fly-fishers of long and successful experience and in every sense entitled to be regarded as masters of the craft.

To the Marquis of Exeter, Mr. William Senior,

angling Editor of the *Field*, Mr. Christopher Davies, Mr. R. B. Marston, Editor of the *Fishing Gazette*, and Mr. Thomas Andrews, I am also under the greatest obligation for the very charming and interesting contributions to which their names are attached. I only regret that circumstances should have unavoidably deprived my readers of a promised contribution on salmon fishing from the pen of His Grace the Duke of Beaufort, which would have been warmly welcomed by all fly-fishers.

For the rest, it has been my aim to make these volumes as *practical* as possible; and if the exigencies of this *rôle* have involved a certain amount of space being devoted to more or less technical matters—which, however necessary and important, are, perhaps, less attractive to the general angling public than to the enthusiastic student—I hope the other part of the programme laid down by the Editor has not been overlooked, and that the following pages will be found to be sufficiently diversified with anecdotes and incidents of sport to redeem them from being hopelessly 'dull reading.'

H. C.-P.

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NOTE.

If it is desired to give a trial to the hooks, tackle, &c., recommended in the following pages, it is advised that no change of any kind should be introduced, and that in case of purchases or orders from tackle-shops an exact compliance with the instructions should be insisted upon.

Experimental variations and improvements, so-called, are very apt to produce results the opposite of 'improved.' This is specially true as regards bends of hooks, and the proportions of spinning flights.

FISHING.

PIKE AND OTHER COARSE FISH.

INTRODUCTORY REMARKS.

I FEEL that some apology is due to what are, after all, perhaps, the great body of fishermen, for the second part of the title of the present volume.

The term 'coarse fish' has been adopted because it seems to be that most generally used and understood, and, therefore, best calculated to convey readily a correct idea of the contents of this essay. Even whilst employing the expression, however, I must record my protest against it. What is there coarse, for example, about the perch of gorgeous scaling, armed cap-à-pie like a paladin of old, and glowing with half the colours of the rainbow? Or the 'arrowy dace,' almost as mettlesome, and perhaps even more graceful and glittering than the aristocratic trout?

> A cold, sweet, silver life, wrapped in round waves,
> Quickened with touches of transporting fear. . . .

Again, when the term 'coarse fishing' is used, have those who employ it ever watched, with a sympathetic eye, the consummate skill and dexterity which a 'cockney' roach-fisher will display in pursuit of his game, and the gossamer fineness of every bit of the tackle he uses? Depend upon it, in the luring and landing of a two-pound roach on a single-hair line, there is

called for and shown a 'fine art,' as my friend, Mr. Senior, expresses it, which need not shrink from contrast with that demanded by any branch of angling whatever. 'Coarse fishing' is as great a misnomer as coarse fish; every kind of fishing is capable of being brought to perfection, and of being carried out scientifically as well as clumsily and ignorantly; and I hope I need not appeal to the tenor of all my former writings on the subject to assure my readers that I am a strenuous advocate for the use of the very finest tackle compatible with safety, not in fly-fishing only, but in every branch and every department of the art of angling. Indeed I recall with, I hope, some pardonable pride and pleasure that after the publication of my earlier essays, commentators, more kindly and indulgent, doubtless, than critical, were flattering enough to give me the sobriquet of the 'Apostle of Fine Fishing.'

I shall not apologise, therefore, for the fact that in the following pages considerable space and attention are accorded to matters, as some might consider them, of almost trivial detail. The 'whole is made up of its parts,' however; and without careful attention to details neither neatness nor strength can be attained. The difference in killing power between one bend of hook and another, slightly varied, is not less than 100 per cent.

THE PIKE (*Esox lucius*).

The wary Luce, midst wrack and rushes hid,
The scourge and terror of the scaly brood.—AUSONIUS.

Although there is but one species of pike (i.e. *Esox lucius*) found in the waters of Great Britain, and recognised in those of Europe, the rivers and lakes of North America produce a great many varieties, all possessing more or less distinct characteristics. Into the details of these it is not necessary to enter; but the following is a list of the principal species which, according to American writers, appear to have been clearly demonstrated to be distinct:—The Mascalonge (*Esox estor*) and the northern Pickerel (*Esox lucioides*), both inhabitants of the great lakes; the common Pickerel (*Esox reticulatus*), indigenous to all the ponds and streams of the northern and midland States; the Long Island Pickerel (*Esox fasciatus*), probably confined to that locality; the white Pickerel (*Esox vittatus*), the black Pickerel (*Esox niger*), and *Esox phaleratus*, all three inhabiting the Pennsylvanian and Western waters.

Of the species above enumerated the first two are the types, all the others following, more or less closely, the same formation as to comparative length of snout, formation of the lower jaw, dental system, gill-covers, &c.

As regards the European pike, it seems probable that there may be varieties yet to be discovered, as Dr. Genzik assures me that he has found some specimens which had teeth like the fangs of the viper—capable of being erected or depressed at pleasure,—a circumstance all the more remarkable as the jaws also of the fish are furnished with extra bones to increase the

size of the gape, very similar to the corresponding bones in the viper conformation.

We have, however, in the British Islands and on the Continent, only 'one *recognised* species;' which species, according to the author of 'British Fishes' and some other writers, has probably been 'acclimatised.' Personally I am rather disposed to believe it to be indigenous; but I willingly leave the point to the researches of the curious in such matters, and to the students, if such there be, of mediæval ichthyology. If the fish was really an importation, it could not, at any rate, have been a very recent one, as pike are mentioned in the Act of the 6th year of Richard II., 1382, and also by Chaucer in the well-known lines:

> Full many a fair partrich hadde he in mewe,
> And many a breme, and many a *Luce* in stewe. . . .

One of the names by which the pike was formerly known, now obsolete, or at any rate used only as a diminutive, is 'pickerel;' which again, when arrived at a certain, or rather uncertain age of discretion, becomes a 'jack;' to be finally inducted into the full dignity of pikehood. The term 'pike' has been supposed to take its origin in the Saxon word *piik*, sharp-pointed, in reference to the peculiar form of the pike's head, thus, by the way, furnishing an argument in favour of the indigenous character of the fish, in contradiction to Yarrell's 'importation' theory. Skinner and Tooke would derive it from the French word *pique*, on account, they say, of the sharpness of its snout. It is the *brochet* or *brocheton*, *lance* or *lanceron*, and *becquet* of France, the *gädda* of the Swede, and the *gedde* or *gei* of Denmark, which latter term is nearly identical with the lowland Scotch *gedd*. Ingenious derivations of all these names have been discovered by philologists, but they are, for the most part, somewhat fanciful. The *luccio* or *luzzo* of the Italians, and the term *luce* or *lucie* ('white lucie' of Shakespeare and of heraldry) are evidently derived from the old classical name of the fish, *lucius*. Here again, however, we

get among the philologists, and I will only give one illustration from Nobbes, who has been called the father of trolling, to show how much, notwithstanding the proverb, can be made out of how little. This remarkable author suggests that the name *lucius* is derived 'either *à lucendo*, from shining in the waters, or else (which is more probable) from *lukos*, the Greek word for *lupus*: for as,' says he, 'the wolf is the most ravenous and cruel amongst beasts, so the pike is the most greedy and devouring amongst fishes. So that *lupus piscis*, though it be proper for the sea wolf, yet it is often used for the pike itself, the fresh-water wolf.'

The pike is mentioned in the works of several Latin authors, and is stated to have been taken of very great size in the Tiber; but it has been doubted by naturalists whether this fish —the *Esox* of Pliny—is synonymous with the *Esox*, or pike, of modern ichthyology. One of the earliest writers by whom the Pike is distinctly chronicled is Ausonius, living about the middle of the fourth century, who thus asperses its reputation:

> Lucius obscuras ulva cœnoque lacunas
> Obsidet. Hic, nullos mensarum lectus ad usus,
> Fumat fumosis olido nidore popinis.
>
> The wary Luce, midst wrack and rushes hid,
> The scourge and terror of the scaly brood,
> Unknown at friendship's hospitable board,
> Smokes midst the smoky tavern's coarsest food.

It seems as if from the earliest times the character, so to speak, of the pike has commended itself especially for treatment both in prose and verse, and the number of quaint anecdotes, mythical legends, and venerable superstitions which have clustered round it give the pike a special and distinct interest of its own. I confess that to myself there has been always something singularly attractive in the very qualities which have made its chroniclers more often detractors than panegyrists. The downright, unadulterated savagery of the brute attracts me; he is no turncoat, vicious one day and repentant the next.

Nothing that swims, or walks, or flies does he spare when his appetite is whetted by the sharp wind sweeping

> The half-frozen dyke,
> That hungers into madness every plunging pike.

Woe be to his children, or his brother, mother, or cousin, grandchildren or great-grandchildren, should they cross his path; and I have not the slightest doubt, speaking ichthyophageously, if not ichthyologically, that under sufficient provocation he would tackle one of his own ancestors, even to the third and fourth generation. This is all 'thorough,' and is in keeping with the grim muzzle and steely grey eyes which fix upon the observer with unwinking and ferocious glare. The very rush and flash with which he takes his prey has in it a fascination, and I have more than once seen a man drop his rod from sheer fright when a pike, that has been stealthily following his bait, suddenly dashes at it by the side of the boat or at the moment it is being lifted out of water.

The pike, I am happy to say, is daily rising in the estimation of anglers as a game and, in the largest sense of the word, sporting fish. This is partly owing, no doubt, to the difficulty, with an ever-increasing army of anglers, of obtaining decent trout or, still more, salmon fishing (in fact, a good salmon river has now become almost as expensive a luxury as a grouse moor or a deer forest), and partly also because the art is now pursued with greatly improved appliances.

We live in times in which, as I observed in the first page of the first pamphlet I ever wrote on jack-fishing, no 'well informed pike is to be ensnared by such simple devices as those which proved fatal to his progenitors in the good old days of innocence and Izaak Walton, and were we now to sally forth with the trolling gear bequeathed to us by our great grandfathers of lamented memory, we should expect to see every pike from John o' Groat's to Land's End rise up to repel with scorn the insult offered them. No! depend upon it the dwellers in what Tom Hood called the 'Ecly places' have

come in for their full share of the education movement, and the troller who at the end of the nineteenth century would expect to make undiminished catches must devote both time and attention to refining to the very utmost every part of his equipment.

'Every hook in the spinning flight, every link in its trace, becomes in his view an object of importance, because it is not only positive but comparative excellence which he must aim at. Other trollers will take advantage of the latest 'wrinkle,' if he will not, and the art is not only to fish fine, but, if he wants to make the best basket, to fish finer than anybody else, at least on the same water. It is perfectly true that when the pike is sharp-set he is, as I have said, practically omnivorous, but where fine fishing and perfection of tackle come in, is on the occasions when he is not regularly on the feed, and when his appetite is dainty and requires to be tickled. At these times the man who fishes fine will fill his creel, whilst he who uses coarser tackle will, in all probability, carry it home empty.

'But it is not only as regards the basket that fine fishing is an object worth aiming at. It is the only mode of fishing that really deserves the name of sport; to haul out a miserable pike with an apparatus like a barge pole and a meat-hook neither demands skill nor evokes enthusiasm. There is no "law" shown to the fish, and not the slightest prowess by the fisherman; it is simply fish-slaughter, not sport.'

PIKE-TACKLE.

SPINNING AND TROLLING-RODS.

An idea—happily now nearly exploded—has prevailed amongst trollers since the time of Nobbes of the Dark Ages, that a pike-rod should necessarily be a clumsy rod—a thick, unwieldy, weighty, top-heavy weapon—in fact, a sort of cross between a hop-pole and a clothes-prop. Whatever our pike-fishing ancestors may have been in the matter of *skill*, it cannot be denied that their rods and angling gear generally were in every way vastly inferior to our own, and, indeed, such as to make any display of what we should consider science out of the question.

On no part of the fisher's equipment has more patience been lavished, with the result of greater advances, than on the all-important item of the rod. That so far at least as trolling-rods are concerned there was plently of room for improvement may be gathered from the receipt given for the construction of a trolling-rod by the authoress of the 'Boke of St. Albans,' about A.D. 1486, wherein the implement in question is recommended to be of at least fourteen feet long; the 'staffe' or butt measuring 'a fadom (fathom) and a half,' of the thickness of an 'armgrete,' or about as thick as a man's arm, and the joints to be bound with stout 'hopis of yren' (iron hoops)!

In the first volume I have given a description of the different woods used in rod-making, and I will not therefore repeat it here, the more so as both hickory, greenheart, and ash—that is, almost all the principal rod-woods—may be, and are, very commonly employed in the manufacture of Spinning and

Trolling-rods. The wood really most suitable for the purpose, and which as time goes on will, I have no doubt, come to be more and more used, is bamboo. This wood possesses in a special degree the qualities required for a spinning-rod, being both light, strong, and of sufficient stiffness, and, it may be added, pliability also, for the most perfect 'casting' of a spinning bait and for the 'playing' of it when it has been cast.

I daresay many trollers—much better fishermen than I am—will warmly, not to say hotly, dissent from this proposition. Every angler has his own hobby on the subject of rods. One man swears by a bamboo rod, another by lancewood or hickory, and a third would lose half the enjoyment of his day's sport if it were not to be effected by his trusty greenheart of early and well-beloved associations. Its owner might say, and say with truth, 'The difference you speak of in weight is exceedingly small, and there is a certain "swishiness" and elasticity in greenheart or hickory which is not to be got out of the most carefully selected bamboo.' I find myself that I get quite as much play, or 'swishiness,' as I want out of a four-jointed bamboo rod with a greenheart top, and as regards weight, the difference, slight as it is, tells decidedly in favour of the hollow wood.

The other hollow woods are practically useless for pike-rods. The white cane, the greater part of which comes from Spain and America, and is a fragile and delicate creature compared to its swarthy Indian cousin, is used principally for roach-rods—'White Cane Roach-rods,' as they are temptingly described in the catalogues—and it is fit for nothing else; for this special purpose, however, it is perfection. Another cane also that is quite inferior to the East Indian is the Carolina; it is lighter and longer between the knots, and is commonly employed only in bottom-fishing rods of the commoner qualities. Last on the list comes the jungle cane, a specialty of China, but found also in many other parts of Asia. It grows as thick as a man's body, and is put by the Chinese to a variety of uses, amongst others hollowing out the

pith and converting the skin into water-pipes. It is this skin, or rind, only, with which we have to deal in rod-making, and that must be taken from a cane about as thick as a man's wrist. This is split up into narrow slips, and these slips, when planed and smoothed down, become the solid grained-looking pieces of wood constantly forming the upper splices of top joints.

But to my text. One of the most charming spinning-rods I ever possessed—or rather possess, for I am happy to say it still exists—came to grief in the butt, and instead of having a new butt of the same wood, bamboo, made in its place, I thought I would try an experiment, and had substituted for the injured member a butt made of ash. The composite weapon thus produced—ash butt, second and third joints bamboo, top greenheart—seems to combine in an exceptional degree the qualifications to be desired in a spinning-rod. Especially the play and casting capacity of the rod are remarkable, and I think of all the spinning-rods I have, or have had pass through my hands, this is my favourite. The two centre bamboo joints are all that remain of a mottled East Indian cane which I chose from amongst the hundreds in Mr. Farlow's warehouse when a stripling. It has since had tops enough to stock a tackle shop. Can it be that association has prejudiced me also in favour of my schoolboy friend? Many memories may certainly cling round an old rod, and, perhaps, few veteran anglers could be found to dissent from the following lines in which Stoddart has given expression to the sentiment :—

THE OLD WAND.

The wand that hath done service fair,
From thy boyhood to thy prime,
Onward to thine after-time
Cherish. It is worth all care.

Many a fair-spoken friend
Hath less friendship in his heart
Than this passive piece of art
And will fail thee at the end.

But a trusty rod and tried,
  Warp'd by service though it be,
  Toughens in adversity,
And clings the nearer to thy side.

Cherish it for thine own sake,
  For the record of events
  Hanging on its accidents,
And the memories these awake.

Ferrule bent—distorted ring—
  Top curtail'd or past repair—
  The continual wear and tear,
And relaxing of its spring.

Every notch by knife impress'd,
  Ranging up and down the butt,
  In its form of cross or rutt,
Is to thee of interest.

In the fortunes of thy wand
  Thou hast part, no common part;
  And the beatings of thy heart
With its triumphs correspond.

Give it place in thine abode—
  In thy dwelling's inner shrine—
  In the chamber made divine
By love and faith, lay up thy rod.

A capital spinning-rod may be made from the spliced-cane grilse-rod described in the first volume. The rod, which was made by Messrs. Hardy Bros., fishing-tackle makers, of Alnwick, has the additional strength given by a steel spring centre—a specialty in spliced rods of which, I believe, Messrs. Hardy alone, or almost alone, possess the secret. In order to turn the fly-rod into a spinning-rod, or indeed a rod suitable for any sort of jack-fishing, it is only necessary, when giving the order for the rod, to include an additional (short) top. The length of mine is three feet (ferrule excluded) as against four feet seven inches in the ordinary fly top, and it seems to be about a happy medium.

I find a great convenience in having my jack-rods (as well as my fly-rods) furnished with several tops of different lengths—the more the better. By this means one rod will, at a pinch, often answer for several purposes, and the necessity of carrying about a large stock of rods on the off chance of some other fishing than that counted on turning up, will often be avoided. For instance, the 'composite spinning-rod' above described answers with a somewhat longer top exceedingly well for 'paternostering,' or for minnow-spinning for trout, for barbelling, worm-fishing for salmon, and, indeed, for any purpose (except fly-fishing) where strength is a more important point than length, or than extreme lightness. When driven into a corner I *have* even, and not unsuccessfully, used it for casting the fly, and I calculate roughly that if the number of salmon I have caught with it with minnow, fly, or worm (in the manner described in the last volume), were laid head and tail, they would put a girdle round Trafalgar Square.

The length of this rod is twelve feet, and for my own part I never care about fishing with a longer one. Many spinners, however, patronise a rod of more ample proportions, and indeed it is evident that a rod which would be the perfection of length for a man of five feet nine or ten, would not do justice to the physical capabilities of a troller of six feet three, to say nothing of the well-known Irish giant of jack-fishing celebrity, the staff of whose rod might be (and is for aught I know) like a weaver's beam. There is a record of a very small troller with a very big rod whose fate, if it may not serve

To point a moral or adorn a tale,

yet carries with it a caution to reflecting pike-fishers. At the first cast his heavy rod overbalanced his light body, and he tumbled out of the punt, below New Lock Weir, and was drowned.

One general rule may, I think, be laid down with regard to tops: the larger and heavier the baits used the shorter should be the top joint.

The rings for all trolling-rods should be what is called 'stiff' (upright), and sufficiently large to admit of the line passing readily through them, and of sufficient hardness to be capable of resisting considerable friction. Another point is that the top and bottom rings should be so shaped as to prevent the line catching round or over them whilst in the act of running out. The diagrams represent the sizes and shape of rings which, after a good many experiments, I have found most suitable to the purpose, and which are now very generally adopted by trollers.

It will be seen that in the bottom ring, which is about the best size for a medium length of rod, the perpendicular supports are wider apart at the base than at the apex, the object being to frustrate any curls or 'hitches' which the line may attempt to twist round them. This, it can be safely asserted,



FIG. 1.—'PRONGED' TOP RING.

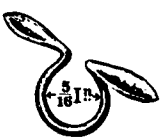


FIG. 2.—STEEL ROD RING.

will be found of really great practical convenience to the troller. Perhaps, however, the form of the top ring is of even greater importance, as it is both more liable to catch in the line and proportionately more difficult to clear at a distance of twelve or thirteen feet. The material, as in the case of all the other rings, should be steel or iron wire, and the shape of the ring shown in the engraving represents the results of some pains and trouble bestowed on the subject by the late Mr. Frank Buckland and myself.

The merit of this invention is the avoidance of all projections over which the line would or could possibly 'hitch' itself. It is, in fact, to a certain extent, a modification of the principle of the pronged ring recommended for the bottom joint. The wire, it will be seen, is made to branch out in the shape of a V,

the sides forming a continuation of the ring itself, and acting as a guard on either side to throw off the line if it should attempt to curl over, very much as the sloping sides of a gate on a barge-walk throw off the towing line. The inclination of the ring is also towards instead of away from the butt,—the head or loop forming, in other words, an acute instead of an obtuse angle with the rod.

The woodcut gives the shape recommended for the intermediate rings, of which it is important that there should be enough on the rod to prevent the weight of the line bagging between the intervals, and yet not so many as unnecessarily to increase the friction of the line passing through them, or add to the weight of the rod.

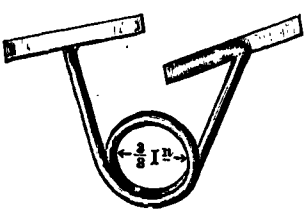


FIG. 3.—'PRONGED' BOTTOM RING.

For all these rings steel or iron wire is found to answer best; brass, from its softness, is easily cut or worn into sharp grooves by friction, and these grooves very speedily wear out the dressing of the line, and, before long, the line itself. Many 'dodges' have been tried to obviate this cutting process, more especially in the case of the top and bottom rings, where the friction is naturally greatest. Mother-of-pearl, agate, &c., have been used as 'linings,' or inner rings, to receive the immediate friction of the line, but besides being too expensive for ordinary purposes, these solid additions add, not inappreciably, to the weight of the rod. I have always been of opinion that some sort of china or glass enamel or lacquer, such as that used in the lining of saucepans, might be adapted to rod rings. There is an American process especially, the depôt of which is in New

Bond Street, which seems as if it might be made available, but the proprietors are either unable or unwilling to devote the necessary time to trying the experiment on a scale to bring it within the range of possible commercial success.

Whilst on the subject of trolling-rods I may, perhaps, say a few words as to the Ferrules.

These should always be what is termed 'hammered,' and not 'tube-cut.' The ferrules used for the commoner rods, or tube-cut ferrules, are simply cylinders, of the same size at both ends, and cut off, two or three inches at a time, as required, from a piece of common soldered brass piping. These, of course, cost next to nothing, and break or bulge with the first strain put upon them. The ferrules used by the really good tackle-makers are made, I am informed, each one separately, out of sheet brass, hard-soldered, or brazed, and then hammered out into the proper shape on steel triblets,—a process which, though somewhat costly and tedious, makes the ferrule in the end almost as hard as the steel itself ('Book of the Pike'). I am not myself a practical rod-maker, and am, of course, therefore, obliged in these matters to depend for my information upon the tackle-makers, whom I always find most obliging in imparting their knowledge, even where it may be considered in the nature of a trade secret. In the present case there appears to be some difference of opinion in regard to the information I have received through the profession; and the following was sent to me by an amateur rod-maker of large practical experience, but who does not wish his name to be published :—

'I am inclined to think that the cases referred to (in your "Modern Practical Angler") where the brass ferrules of rods "bulge" and give way, are to be thus explained. The best tubing is *mandrel-drawn*, and I do not think any hammering would produce a density of metal so hard as that which results from well-drawn tubing : but it often happens (too often) that the tube and its correcter do not fit with that nice accuracy which is essential. In such case what does the ferrule-maker

do? I will tell you, he anneals his tubing, and then with the furnisher adapts it to its fellow. For all practical uses its strength is then gone.

'My own impression is that mandrel-drawn tube not tampered with, is (*cæteris paribus*) denser and harder than hammered tubing is, and no hammered tube could be so uniform.

'I hope you will forgive this criticism of a work with which I am really charmed, but I shall be only glad to find that you accept it as it is meant, in all courtesy.'

Who shall decide when doctors disagree?

There will be no disagreement, however, as to the fact that all joints of trolling-rods should be 'double-brazed'—i.e., covered with brass—not only round the thick part of the joint, where it fits the ferrule, but also round the thinner end or wooden plug below it. In all sorts of pike-fishing, and notably in spinning, this is of particular importance, as the rapid passing of the wet line through the rings tends to cause a perpetual dripping and trickling of water downwards towards the butt. The natural result is that the water does its best to get into the joints, and, if it succeeds and the precaution of double-brazing be not adopted, the joint has a special aptitude for swelling and sticking fast. When joints are only half-brazed, or not brazed at all, the best plan is to grease or soap them before use. Joints which have become hopelessly 'stuck' may generally be easily separated by being turned slowly round and round at the 'sticking point' over the flame of a candle for some seconds, or until it is found that the joint will come apart. This process does no damage to anything but the varnish on the ferrule.

After the subject of ferrules naturally comes that of joint fastenings. I have already gone into this matter so thoroughly in the first volume that I do not propose here to repeat the account of the various new joint fastenings therein described in detail with illustrative diagrams. Any one of them will be found a great improvement on the old-fashioned fastening, which, though it has become venerable by time, possesses

it must be admitted, nearly every drawback that 'joint is heir to.'

What holds true in regard to the joints of fly-rods holds true in regard also to the joints of trolling-rods, and especially of spinning-rods, where the constant swaying to and fro in the action of casting is apt to induce those sudden separations between top, middle, and lower joints which entail waste of time and loss of temper, if nothing more. If anglers would continue to refuse to purchase any more rods with the old-fashioned fastenings they would soon become obsolete. It is monstrous that with such well-known improvements within their reach tackle-makers should go on manufacturing trolling-rods with the old, faulty, and unmechanical joint fastenings.

As a good varnish for rods, and generally for varnishing lappings of hooks, &c., the following, used and commonly supplied for the purpose by one of the best known tackle manufacturers, will be found useful :—

Spirits of wine, $\frac{6}{10}$.
Orange shellac, $\frac{3}{10}$.
Gum Benjamin, a small piece, about $\frac{1}{10}$.

Allow the mixture a fortnight to dissolve before using. A varnish of some sort over the lapping is exceedingly valuable in all tackle, as it protects the silk from the effects of the water. In gimp tackle it is especially important, owing to the corrosion otherwise produced by wet brass and steel coming in contact. This varnish dries almost immediately.

Trollers will find a great comfort, and perhaps escape serious inconvenience, by having the butt-ends of their trolling-rods fitted with an india-rubber knob, which is supplied at most of the larger tackle shops in London. The constant pressure of the hard end of the brass or wood against the groin (this being the position the end of the rod generally occupies in pike-fishing) becomes after a short time the cause of considerable irritation in the part pressed against.

With regard to the reel for spinning and trolling, any of the

reels referred to in the first volume as suitable for salmon-fishing would, in smaller sizes, be also suited to spinning, if it were not for the question of weight. In spinning, a reel that will carry sixty or eighty yards of jack-line is practically all that is required, and such an endless assortment of these can now be obtained at the tackle shops that the only difficulty lies in making a selection. For the reasons elsewhere mentioned I should recommend a check winch with narrow grooves and deep side plates—one of the greatest improvements which has been introduced into reels in modern times—and a check which should be rather 'weaker than stronger,' to paraphrase the Admiralty instructions to their recruiting officers, 'to prefer recruits having hands rather larger than smaller.' The advantages gained by this sort of reel over the old-fashioned shallow-plate broad-grooved winch are increased speed—inasmuch as the diameter of the axle upon which the line is wound is enlarged—and increased power, because the handle by which it is worked being further from the axis proportionably greater leverage is obtained.

The handles of all reels should either be directly attached to the side plate or so adjusted as to amount to the same thing. The only drawback to the solid side plate is the additional weight it gives the reel, but the advantages of the handle thus attached are so numerous as to make other considerations of comparatively little importance. Amongst these advantages are the obviating of the constant entanglement of the line round the old-fashioned detached projecting handle—or rather more correctly speaking, the crank to which the handle is attached—and the greatly increased strength, and improbability of being broken or bent by the many little accidents that take place during the actual business of fishing.

Of the solid reels suitable for spinning—and what I here say of reels for spinning applies equally to reels for every description of pike-fishing—Mr. Chas. Farlow's 'patent lever winch,' or perhaps, where fish run unusually large, Malloch's 'Sun and Planet,' described in Vol. I., will be found the best,

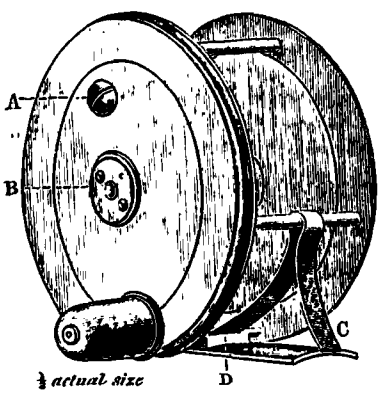
as they undoubtedly are for salmon-fishing. No doubt they might both easily be made lighter than they are at present. The weight is considerable; a Malloch reel with a plate $4\frac{1}{2}$ inches in diameter weighing 1 lb. 14 oz., and this where one of the side plates is of ebonite. The $3\frac{3}{4}$-inch plate reel (Mr. Malloch's) of the same make weighs 1 lb. $1\frac{1}{2}$ oz.

I am very much inclined, however, the next time 'I go a-spinning' to give Slater's very clever and admirable 'combination reel' (see p. 55, Vol. I.) a trial. It has all the merits of an ordinary check reel (besides being much lighter) and in addition it combines the advantages of the Nottingham reel, by which under special circumstances, such as wading, spinning from rough stubbly banks, and so forth, the necessity of coiling up the line on the ground, &c., is avoided. This reel, four and a half inches in diameter, with fifty yards of finest dressed-silk running-line on it, only weighs ten ounces. On the whole Slater's reel is the most original, and I am disposed to think, from the spinner's point of view, also the most practically useful of all the inventions in the way of reels to which the late Fisheries Exhibition gave birth.

One serious drawback, however, so far as my experience goes—and, so far as my experience goes, one only—is common to every reel hitherto made, viz., that *the line is apt to get caught under the back part of the reel itself*, thus causing a constant irritating annoyance, and, in the case of the pike-fisher—and especially of the spinner—a serious danger. In order to obviate this I designed some years ago a small spring so adjusted that when the reel is fixed to the rod, it—the spring—presses closely on the butt or winch-fittings behind the reel. The spring (see diagram p. 20, C,) can be attached with perfect ease to any well-made reel at a nominal cost, and I venture to think that no spinner who has once experienced the practical convenience of this antidote to 'hitching' will ever use a reel without it.

It remains to consider the reel used in what is known as the Nottingham Style of fishing. This is a reel, without 'check'

of any kind, and generally made of wood, on which the line is 'wound in' by the troller instead of being drawn in by hand, and from which the spinning or other bait is cast, without any reserve of loose line, on the assumption that between the skill of the caster and the unchecked 'running' of the reel itself the latter will give out sufficient line, and with sufficient rapidity and accuracy, to meet all practical requirements. Indeed, as to spinning, I have often heard Nottingham fishers, or, at any rate, fishers who use the Nottingham style, assert that they can throw more accurately and to longer distances with the reel described than with the method practised on the Thames



LINE HITCHING PREVENTER.

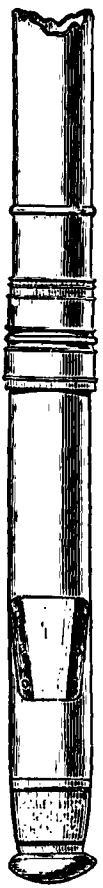
and most other rivers of letting the line lie in loose coils on the ground before making the cast. When, however, I have had opportunities of bringing this assumption to the actual test of practice I find it more or less break-down. With the same weight of bait and trace I am quite satisfied that both a longer and more accurate cast can be made by the ordinary method, whilst with a really light bait and trace—the whole thing, lead included, weighing, let us say, 1 oz. 2 scruples—(such as I frequently use myself) I am of opinion that the Nottingham style would be found in practice an entire failure.

I remember some years ago Mr. Bailey, the then most celebrated professor and exponent of the Nottingham style of spinning, sending me for examination some of his flights and traces. All I can say of them—and I have them in my possession still—is that they are altogether too clumsy and too heavy for spinning in rivers or other waters where the pike have had opportunities of seeing a spinning bait tolerably often, and in the Thames they would be practically useless.

Another serious, and I should say ineradicable, defect of the Nottingham reel is its tendency to 'overrun' itself, thus producing a series of 'complications,' to use a generic rather than a specific term, which, if they did not at critical junctures result in the loss of the fish, are at any rate likely to lead to a frame of mind on the part of the spinner the reverse of equable. Again, with these—un-'checked'—winches there is another danger to be guarded against. If the graduated pressure of the finger be for an instant removed from the reel or line the latter runs out so freely as to produce the effect of complete slackness. This is an evil greater, perhaps, in its results even than the other, as nothing is more certainly disastrous in spinning than a slack line on a running fish, and nothing more likely than the contingency alluded to where fish have to be followed rapidly over ditches or broken ground. These two faults—vices would not be too strong a term—are radical and inherent in the principle of all 'plain' reels, whether wood or brass. They are found, however, in combination, in their utmost perfection in the so-called 'Nottingham reel.' 'It would not be wise,' writes a recent author, 'for any fly-fisherman to use Nottingham reels at first; the manual management of the checking power would take the tyro months to master, and any mismanagement, which is all but inevitable, would be fatal just when the special qualities of these reels should be serviceable.' This testimony carries additional conviction, inasmuch as, on the whole, the writer appears to favour the Nottingham reel—at any rate as improved by some recent additions.

I do not, of course, for a moment expect, or, indeed, wish,

to convert the Nottingham trollers to what is commonly known as the 'Thames style' of spinning; first, because in fishing, as in everything else, there is a charm in variety; secondly, because I am well aware that, at any rate on their own river, the Nottingham spinners are both expert and successful as regards the actual results of their system—and these the most important results, viz., making good baskets . . . I might add as a third argument against the attempt, that it would, I am quite satisfied, be a failure.



Amongst the recent, I was going to say less important, improvements in fishing gear—but no improvement that adds materially to the comfort and efficiency of the angler's equipment is unimportant—are the various ingenious inventions before noticed, for attaching the reel to the rod. Of these I can only repeat here that the most simple, inexpensive, and in every way efficient fastening is that brought out at the late Fisheries Exhibition, I believe, by Messrs. Hardy Brothers, of Alnwick.

It is applicable, without exception, to all sorts of rods, and to every description of reel which is attached by a plate in the ordinary way. Whether it could be fitted to rods already made with the common ring or other fastenings, I am unable to say positively, but I have little doubt that in many cases—perhaps in all—it could be substituted. I shall never have a rod made with any other fastening in future.

REEL-FASTENING. The 'catch' was originally attached to the rod by nails or screws (*vide* cut), but, at my suggestion, Messrs. Hardy have now substituted a catch entirely surrounding or clasping the rod, which is both more

tightly and obviates any possible liability to breakage at that point.

Passing from the reel, the next subject demanding attention is the reel-line. Since the times when Dr. Badham assures us that trolling-lines were spun from the *byssus* by which mussels anchored themselves to our rocks and ships' bottoms, an endless difference of opinion has prevailed as to the lines suitable for pike-fishing generally, and for spinning especially, as well as to the dressings necessary to give them the exact degree of 'waterproofness,' and of stiffness or rigidity, which are the two essentials in any spinning-line fit for use. Without these conditions the lines will either not run out at all, or will do so in a succession of knots or 'kinkings' destructive of any enjoyment of the sport.

Every kind of material has, as I say, been at one time or other recommended, from sheep's and catgut to 'silver and silk twisted.' These prescriptions, however, it must be admitted, belonged to the earliest historic (or shall I say pre-historic?) times of the literature of angling. Even amongst our modern authorities, however, great divergencies are observable. There are the advocates of oil dressing, and the advocates of india-rubber dressing—the patrons of silk lines and those who hold to the hemp-spun fabrications of the Manchester Cotton Twine Spinning Corporation, whilst another recent contributor to fishing literature goes out of his way to 'back a hair line against them all at a venture.' A receipt which does not seem likely to prove very successful, as it is within the experience of most spinners that, even with the addition of a goodly proportion of silk, twenty yards of ordinary 'fly line' cannot be induced by any amount of persuasion to run out through the rings of a jack rod.

In the 'Book of the Pike'[1] I wrote nearly 20 years ago—'Some discussion has recently taken place as to the merits of catechu, indiarubber, and other waterproof dressings, especially

[1] 3rd Edit. Routledge and Co., Broadway, Ludgate Hill.

in securing greater durability; and I shall hope at a future opportunity to go more fully into this question with reference to a few experiments which I have carried out, but I am satisfied that up to the present time no practical application of either of these dressings has been arrived at, or, at least, made public, which, having regard to the numerous points to be considered, will bear comparison with common 8-plait oiled silk.

I did go very thoroughly into the experiments referred to in the above paragraph, but with no result sufficiently satisfactory to be worth chronicling in these pages. Indeed, it may freely be admitted, that all the conditions pointed out as necessary in a spinning-line are very fairly fulfilled by the ordinary 8-plait dressed silk lines to be bought at all the tackle shops. As regards the dressing used by different makers and amateurs, 'as many men so many opinions.'

Here, however, is the receipt for this oil dressing which is adopted by a well-known and experienced fisherman :—

Take three teaspoonfuls of sweet oil, of bees' wax and dark resin a piece of each the size of a walnut; bruise the resin, cut the wax in pieces, and then put oil, wax, and resin into a small pipkin, and let it simmer before the fire till the whole is in a liquid state. Then dip your trolling-line into the hot mixture and let it remain a minute; then take it out and hang it up to dry, which will take two or more days to do; when quite dry it will be waterproof stronger, and last much longer than when dressed with anything else that I am acquainted with. Next in value I consider wax-candle well rubbed on and into lines.

The following, for 'varnish dressing,' is from a practical fisherman, whose method has been highly approved of :—

Mix (cold) copal varnish and gold size, in the proportion of ten parts of the former to one part of the latter. Soak the line in this dressing for, say, a couple of days, the jar in which it is placed being air-tight. Then stretch the line to dry. The line will not be fit to use for three or four weeks.

Here is another 'receipt for waterproofing lines,' taken from 'Chitty's Fly-fishing Text-book': I have never tried it, but on

the principle of *variatio delectat*, some of my readers may, perhaps, like to do so. It 'looks well' on paper :—

To a quarter of a pint of 'double boiled cold-drawn' linseed oil, add one ounce of gold size. Gently warm and mix them well, being first careful to have the line quite dry. While the mixture is warm, soak the line therein till it is fully saturated to its very centre, say for twenty-four hours. Then pass it through a piece of flannel, pressing it sufficiently to take off the superficial coat, which enables that which is in the interior to get stiff. The line must then be hung up in the air, wind, or sun, out of the reach of moisture, for about a fortnight, till pretty well dry. It must then be re-dipped to give an outer coat, for which less soaking is necessary; after this, wipe it again but lightly, wind it on a chair-back or towel-horse before a hot fire, and there let it remain for two or three hours, which will cause the mixture on it to 'flow,' as japanners term it, and give an even gloss over the whole. It must then be left to dry as before; the length of time, as it depends on the weather and place, observation must determine upon. By this means it becomes impervious to wet, and sufficiently stiff never to clog or entangle, the oil producing the former quality and the gold size (which is insoluble in water) the latter; while the commixture prevents the size becoming too hard and stiff. A trolling-line should be thus dressed every season at least.

For *re*-dressing a line, whilst in use or when out of reach of tackle-shops, the following is, perhaps, the best plan that can be tried :—

Stretch the line tightly, and rub it thoroughly with white (common candle) wax. Then take a little 'boiled oil,' which can be got at most oil and colour shops, and placing it on a piece of flannel, rub the line well over with it.' This will have the effect of making the line flexible, and will give a finish to the dressing.

It cannot be denied, however, that there is always some little uncertainty in the effect of oil dressings, especially when manipulated by amateurs; and I have on several occasions had lines returned after re-dressing—and that too from very careful hands—which from some reason or other seemed to become in parts almost immediately rotten,—a result, as far as I could judge, only attributable to the effect of the new dressing.

One great point certainly is never to put the line into too hot a mixture; a temperature in which the finger can be placed without inconvenience should be the maximum. Curriers always, I believe, *wet* their leather before applying oil or grease, which is otherwise supposed to 'fire' it, as it is termed. Truefit recommends the same precaution to be taken before greasing the hair of the beard, and it is possible that there may be some analogous effect produced on silk under particular conditions, even when the oil is not heated beyond the proper temperature.

Be this as it may, however, I believe the fact that silk lines are not unfrequently 'fired' or burned in some way whilst dressing is indisputable; and until some one can discover a remedy we must be content to pay a little oftener for new trolling-lines. In most other respects the oil dressing seems to answer capitally, being neat, very fairly waterproof, and easily applied.

One great safeguard against premature decay we do know; and that is, never under any circumstances to put by a line wet, nor unless thoroughly dried. Attention to this simple precaution will save expense, and not a few of those precipitate partings between fish and fishermen, which are so painful to at least one of the parties concerned.

With regard to the substance or thickness of trolling-lines it is difficult to give suggestions in the form of letterings or numberings, inasmuch as there is great variation in the enumeration of their different sizes by different line makers. What may be described, however, as a line of medium substance, rather than either very stout or very fine, gives, on the whole, the best results. If too fine the friction caused by passing through the rod rings very soon rubs off the dressing, and renders it untrustworthy, and if too thick it will not run with the necessary freedom for long casts, especially where light baits are used. Moreover, the very stout quality has also the disadvantage of being very conspicuous—'a line of invitation,' as somebody calls it, which the fish are not usually in a hurry to accept.

A very important item in the perfection—or imperfection—of all spinning and other pike tackle is the *Swivel*. Owing to

imperfections in the manufacture of new swivels and the results of rust or wear and tear upon old ones, a swivel very often ceases to work properly,—a fact which is generally first made known to the troller by the kinking and twisting up of the line, entailing much trouble before it can be rectified. With a view to remedying this inconvenience, I suggested in the 'Modern Practical Angler'[1] the substitution of two swivels joined in one (or a 'double swivel')—wide cut—by which the probability of the accident alluded to is reduced to a minimum. In fact, two swivels like that shown in the engraving will be found ample for the purposes either of spinning-traces, or for gorge or live-bait tackle.



DOUBLE SWIVEL.

A good many swivels have been invented with some sort of spring loop at one end, to and from which the line or trace can be attached and detached—such as the 'buckle,' the 'corkscrew,' 'watch-spring' swivel, &c., &c.—and these, if perfect, would be of the greatest practical convenience in the manipulation of all kinds of pike-tackle. None of the 'hook-swivels,' however, which have come under my notice are free from serious defects, or combine in all respects what is required. These requirements are very simple—first, that the line should be capable of being slipped on and off with the utmost ease and rapidity, and without such careful manipulation by the thumb and finger nail as may, especially in cold weather, make the operation an exceedingly difficult one; secondly, that the line should by no possibility be able to disengage itself accidentally from the swivel; and thirdly, that the arrangement should be small, neat, and sightly—the last desideratum being indispensable for practical purposes.

These requirements, as I have said, are not to be found united in any one of the existing patterns with which I am acquainted, those fulfilling the former failing more or less signally in the last named, and I have, therefore, endeavoured

[1] 5th Edit. Routledge and Co., Broadway, London.

to produce such a fastening as will fulfil them. It will be seen, I think, that this is done by the swivel shown in the engraving. Why it should be so a glance at the mechanical arrangement of the swivel will probably suffice to indicate. The thing is so simple that the wonder is that swivel makers or tackle vendors have not long ago hit upon the method, instead of year after year continuing to manufacture patterns of hook-swivels which have only to be glanced at to be condemned. It is claimed for the swivel represented in the cut that, besides escaping the charge of unsightliness, the line can be attached and disengaged in a moment, and that, owing to the 'hook end' *projecting towards the centre of the loop*, it is impossible, that it should work off accidentally when in use. A moment's thought and the most cursory examination will, I believe, show this, but if not, a swivel is not a very expensive item, and probably those of my readers who are enthusiastic in pike-fishing will not grudge the slight trouble involved in giving it a trial in practice.



DOUBLE SWIVEL WITH IMPROVED HOOK.

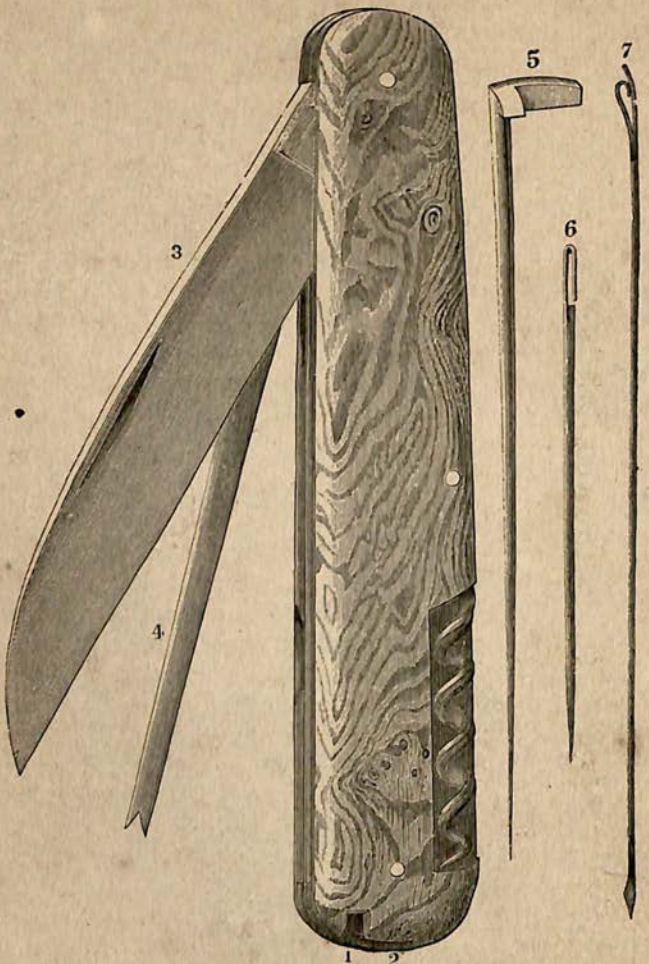
The attaching of this hook-swivel to the end of the reel line will save time, and add to the neatness of the trace-junction. Mr. Charles Farlow, of 191 Strand, London, is the proprietor of this swivel, and is prepared to supply it made exactly according to the pattern shown in the illustration.

All swivels work best and last longest when of small or medium, rather than of large size, and they should be well oiled before and after use, and kept in oiled paper. The observance of this very simple precaution will double the efficiency of the swivel. Blue swivels show less in the water than bright ones, and are less liable to rust.

I think I may venture to say that no one who has ever attempted to extract a flight of hooks from a pike's jaw with his fingers will desire to repeat that experiment; nor does he need to be reminded that the teeth of the pike are exceedingly

sharp. They have also been supposed by old writers to be poisonous, but the truth is, probably, that, like all punctured wounds, the injuries they inflict heal very slowly and painfully. A disgorger of some sort becomes, therefore, a necessity for every pike-fisher, and especially for the spinner, as he incurs a double danger from the multiplicity of his own hooks. I shall not forget in a hurry an incident which occurred to myself when fishing some years ago in the beautiful waters of Sir Edward Hulse, below Braemore, on the Hampshire Avon. By a great exertion of agility I had just succeeded, after making a cast from an 'impossible' standpoint, in conducting to the side, and thence lifting by the gills up to the top of the bank, a pike of some five or six pounds weight. In the position in which I had balanced myself when casting, the chances had been about equally divided between my pulling him out and his pulling me in. In the excitement, perhaps, of the just terminated struggle, I attempted to extract the flight from his mouth without using a disgorger. The first hook came out all right, but the second, just when I had got it clear, was struck, by a sudden wrench of the pike under my knee, clean into and half through the top of the middle finger of my right hand—*the flight still remaining attached to the pike by the big tail hook!* The only chance of freeing myself from my *de facto* captor now lay in the untried possibilities of my left hand. At every plunge of the pike the hook in my finger went in deeper; and it was only by a desperate effort that I at last succeeded in wrenching off the penknife attached to my watch chain, the blade of which I opened with my teeth, and severed the gimp below the hook which had got me. It still remained, left-handed, to break off the hook—one of a triangle—from its shank, which I did with the pair of pliers I always carry in my trolling-case, and finally with the said pliers to force it through the finger and so out point foremost at the other side. . . . On this occasion I recorded a mental vow against the employment of digital disgorgers for the future!

If, in spite of precautions, the fisherman should, by the



THE TROLLER'S KNIFE.[1]

1. Box containing minnow-needle and baiting-needle.
2. Hole for pricker (marked 5).
3. Blade for crimping or other purposes.
4. Disgorger.
5. Pricker, for loosening knots, separating feathers, &c.
6. Minnow-needle.
7. Baiting-needle.

[1] Sold by Watson and Son, 308 High Holborn. Price 10*s.* 6*d.*

exercise of some such ingenuity as that described, succeed in bringing his hand into contact with a pike's teeth, or, what even more often happens, get his finger cut by the blade of a water leaf, or the sudden wrenching out of the running-line by a big fish, a capital temporary plaister is formed by a strip of fresh fish-skin, lapped round with a bit of waxed silk. This will often enable a day's fishing to be 'fished out' with pleasure, which would otherwise have been spoilt. The cut so dressed will also often heal 'by first intention,' as surgeons say.

In many respects the most convenient form for carrying the disgorger is that of a, so to speak, extra blade attached to the fishing-knife. A blade, that is, of course, without cutting edges of any description. By carrying the disgorger in this manner, as a part of the fishing-knife, there is one thing less to be remembered every morning before starting, a blessing to absent-minded trollers, such as, I am sorry to say, I am myself. Attached to a knife-handle a disgorger also becomes a much more powerful weapon; the ordinary disgorger is too short for practical purposes, and there is no handle by which to get a good hold of it. The 'knife disgorger' will be found to save both time and trouble as well as risk to the fingers.

The length of disgorger which I have found, on the whole, most convenient for the purpose is shown in the diagram.

The advantage of this arrangement of disgorger in trolling as well as in other fishing suggested the idea of extending the principle so as to embody in the same knife the rest of the angler's more necessary implements, and thus spare him the trouble of collecting and bestowing each before starting for the river.

The fishing-knife in the engraving contains, besides the 'disgorger-blade,' a minnow-needle and a baiting-needle in a box, a really powerful blade suited for crimping, lunching, or other general purposes, a sharp-pointed pricker for loosening knots, drop-flies, &c., and lastly a strong cork-screw.

The success of the 'troller's knife' led to its giving birth (though in other hands than my own) to a somewhat smaller-

sized offspring, suited for trout-fishing, and fishing generally other than for pike. This was brought out some years ago by Messrs. Watson and Son, fishing tackle makers, of High Holborn.

The subject of Landing-Nets, Gaffs, and Gaffing demands a few words of notice at this point.

In the ordinary business of pike-fishing from the punt or bank, the extreme portability of the net is of small importance. Any net will do, in fact, which is large enough for the purpose, and the only hint on the subject that need be given is that in order to avoid the catching of the hooks in the net the latter is best made of oiled silk. In all cases the longer the handle



A MECHANICALLY-CORRECT GAFF.

the better; a bamboo handle, which has the advantage also of being able to carry a spare top or two, is the lightest and most convenient.

For pike-fishing, when unattended, I never myself use anything except the gaff, carried over my shoulder on the portable net handle (figured at p. 212),—an arrangement which needs little argument to commend itself to the practical pike-fisher. To the spinner especially the gaff presents considerable advantage over the landing-net, as it almost invariably happens that some of the hooks of the flight are outside and not inside the fish's mouth, and are thus apt to get caught and inconveniently entangled in the net. In fact, the landing of pike caught spinning with a net leads to a frequent destruction of the flights,

the fish pulling one way and the net holding the other; and even if a *séparation de corps* between the various hooks does not occur there and then, they are likely to be permanently weakened and their efficiency impaired. The disentangling of the hooked pike from the net is also far from a pleasant operation.

The gaff for pike-fishing should not be so large as that which can be used with advantage for salmon, but the bend of hook which is best in one is best for the other. A gaff of the form shown in the engraving and measuring about two inches across the hook will be probably found on the whole the most convenient size and shape.

It may not be out of place, perhaps, to repeat here a few suggestions that may help the tyro in learning how to gaff his own or his friend's fish. There is a 'high art,' of course, attainable in gaffing as in everything else, and it may even be said that special qualities, physical and mental, are required to make a really first-rate gaffer. Steady nerves and a lightning-like rapidity of decision are amongst the qualities most essential. Nor must the capacity for rapid decision be divorced from its proper complement, rapidity of action. The gaffer should beware of letting the 'I dare not' wait upon 'I would.' He must be ever ready, in fact, to perceive the auspicious moment, and to give instantaneous effect to the perception. The process reminds one of the sort of sudden encounter described as a 'word and a blow,' except that a *blow* is about the last thing to be resorted to by a successful gaffer; and that brings me to the threatened hints for beginners, by attending to which they will possibly save the loss of many good fish.

1. Never thrust your gaff forward until you are prepared to strike, and never make any half-attempts. These feints generally scare the fish, and not unfrequently cut the line.

2. Under *ordinary* circumstances do not attempt to gaff a pike that is more than a foot below the surface, or until he is pretty fairly spent. The best position in which to gaff a fish is when he is 'broadside on.'

3. The proper place to gaff is as near as possible behind the shoulder.

4. The critical moment having arrived, rapidly, but at the same time steadily, extend your gaff over and *beyond* the shoulder of the fish, bringing it gently down upon it, as it were. Then a short sharp jerk from the wrist and elbow will drive in the gaff without prematurely frightening the fish or endangering the tackle.

5. Once more, above all things avoid anything like giving a blow with the gaff. This is likely to prove fatal to everything—except the fish.

But to continue the question of the fisherman's equipment. A subject not yet treated of in this volume is that of how to carry the fish when they are caught—I mean Fishing-baskets and Bags.

In the first volume (pp. 92–97) some descriptions will be found of the latest improvements in the matter of creels and fish-carriers. For purposes of pike-fishing, where the game is apt to be lengthy, either a large wicker creel, such as that sometimes used for salmon, or a wide 'bag,' with extending sides, is necessary to carry the fish with any comfort. Where sport is really good, however, either with pike or salmon, some other means will have to be hit upon, as circumstances may indicate, in substitution for bags and baskets. In each case it is quite out of the question to attempt carrying one's own fish. I have often known even the extensive well of a Thames punt so far filled by the results of a successful foray that the occupants had to be removed and prematurely despatched to avoid suffocating the baits and each other. For the ordinary purposes of float-fishing—or even jack-fishing where, as I say, the fish are not too large or too plentiful—Farlow's or Hardy's creel, or one of the fish carriers already referred to of the largest size, will be found practically to answer every purpose; all of them, in different ways, have the advantage of containing tackle or luncheon compartments separate from the fish-carrying portion.

I once knew a very expensive salmon river in Ireland, where the tenant calculated on paying half his rent by the sale of the fish. In this instance the difficulty of disposing of the game was very simply overcome: the contractor who bought the salmon, went backwards and forwards between his house and the river, and as fast as a fish was caught it was carried off and put in ice ready for shipment to London or Dublin the same evening.

A few words here on gimp, and the way to select and stain it, &c.

Gimp—that is, or should be, a strand of the purest floss silk lapped round with brass or copper wire of different thicknesses—is an almost indispensable adjunct in most kinds of pike-tackle. Its merit is, that whilst as pliant and as fine as the finest twisted gut or silk line, it is practically impervious to the teeth of the ordinary run of pike. Various sizes of gimp are manufactured, and of the thicknesses usually employed by fishermen the numbers run from ooo, 'the finest,' to 3, 'the coarsest.' No. 1 is duplicated, that is, there is, a fine No. 1 and a coarser No. 1. This gives seven numbers in all,[1] and between them the pike-fisher need find no difficulty in selecting exactly what suits his purpose. I never use anything thicker than the fine No. 1 myself, and if the troller keeps the other three smaller sizes, that is ooo, oo, and o, he will have abundant selection. As there are great differences in the quality of gimp, and consequently in the cost of its production, it will be found the best plan in the long run always to purchase the most expensive, as the differences between good and bad gimp cannot readily be observed by the eye, and are often not discovered until too late. The best rough and ready method of testing its quality, and one which I recommend all purchasers of gimp to resort to, is the very simple one of trying its strength or weight-lifting power. As in the case also of dressed silk trolling-lines, the fisherman will be

[1] These are the sizes and numbers of the best gimp as manufactured by Messrs. Kenning, of Little Britain, London.

surprised at the great differences which he will find in this particular in gimps and lines of the same thickness and apparent value.

One other hint. The best gimp is usually made on perfectly white silk, gimp dressed on yellow-coloured silk being ordinarily of an inferior quality.

Although, however, gimp forms an almost indispensable adjunct in most kinds of pike-tackle, it has, in its natural state, the great disadvantage of being exceedingly glittering and showy in the water, especially when new. Nothing can be much worse, in fact, in the interests of 'fine fishing' than the white or yellow of gimp as it comes first from the tackle shops, whilst copper-coloured gimp is only a degree less offensive; indeed, so great is the drawback that some authors actually recommend the troller taking the trouble of lapping all the gimp over from end to end like the shanks of hooks. To get over this inconvenience I tried, when writing the 'Book of the Pike,' various ways of staining or clouding it. Green paint and green sealing-wax varnish, I found, both answered this purpose for a short time, so also did in a less degree the common tackle varnish, but these soon wear off, as do also other less effectual dyes. The difficulty is to get a stain that will permanently cloud, without in any way impairing the present strength of the gimp, or affecting its durability. The best stain I could then hit upon, which has since been very generally used in the tackle shops, was based upon soaking the gimp in a solution of bichlorate of platinum.

This process is, however, apparently only applicable to *brass* gimp, and I have certainly had reason to think that in several instances when the coil of stained gimp has been laid by for some time, it has become so much weakened or rotted—either by the original action of the chemical, or subsequent corrosion affecting the silk—as to make it worthless. Others besides myself have had this experience, and altogether I should hesitate now to recommend it.

Amongst those who tried it, Mr. Hearder, who is well

known as an authority on sea-fishing, formed an unfavourable opinion, and in a letter to the *Field*, wrote :—

I have more than once observed in the *Field* queries from your correspondents respecting the mode of staining gimp black, and I met with a recipe a short time since recommending that it should be dipped into a solution of bichlorate of platinum. There is no doubt of the efficacy of this process ; but it may chance to do more than is required, for allow me to suggest that the operator may find an effect produced analogous to that observed by an amateur who, having been advised by a friend to waterproof his flax line by soaking it in 'boiled linseed oil,' forgot the instructions, and used the linseed oil boiling, which completely charred his line. The following process for blackening gimp is as efficacious and harmless as it is simple.

Put your gimp into a little box of card paper, or what not ; cover it with some flowers of sulphur, put it aside, and in a day or two it will be as black as you can desire. If you cannot wait a day or two, but must have it at once, get a little sulphur in the soluble state, viz., sulphide of ammonium—formerly hydrosulphuret of ammonia. Put a few drops of this into water, and immerse your gimp. A few hours will make it black enough, without in the slightest degree injuring the silk within.

You had better conduct the process out of doors, as the odour of sulphuretted hydrogen is not agreeable to everybody.

To this the editor of the *Field* appends the following note :—

Mr. Hearder is perfectly right in his condemnation of the preparation of platinum. We had some traces of gimp stained by it, and after a few months' keeping they snapped under very slight strain, like scorched string.

Captain Robinson, late of the Bombay army, writes to me that sulphide of potassium is a good permanent stain, both for brass and silver gimp. He says :—

In your 'Book of the Pike,' which I have lately read, bichlorate of platinum is recommended for staining brass gimp. This I failed to obtain in a county town, but being convinced of the importance of staining gimp, I thought of trying sulphide of potassium. As I find this gives a permanent stain to *both* silver and brass gimp, I take the liberty of mentioning it to you. Sulphide of potassium

may be made by dissolving a little lapis infernalis in water, mixing flowers of sulphur with it, and heating in a Florence flask. I believe quicklime in boiling water will also dissolve sulphur.

As I have not thoroughly tested either of these processes, and am rather disheartened by the 'modified successes' of my original experiments, I have of late years taken to the use of 'Brunswick black' (such as is used for japanning iron, blacking fire grates, &c.), applying it with a small hard brush to the gimp just before use. It dries in a few minutes, and, I think, for all practical purposes, quite sufficiently removes the objectionable glitter. It can be renewed as often as needful, and instead of destroying, I am satisfied that this method of staining tends to the preserving of the strength of the gimp. The smallest of phials of the Brunswick black carried in the pocket or in the trolling-case will suffice for many days' needs.

Premising that gimp is far from having the same durability as gut, and that gimp tackle which has been already often in use becomes generally more or less rotten and unsafe to fish with, it may be said that *really good gimp* can hardly be used too fine. It would appear, in fact, as if the best workmanship and the best silk were reserved for the finer numbers, as they are decidedly stronger in proportion than the large sizes.

One word as to the dressing of gimp tackle. All tackle-makers, whether amateur or professional, find that there is a greater difficulty in whipping hooks on to gimp than on to gut —whipping them, I mean, so as to effectually preclude any possibility of their coming off. This is, of course, owing primarily to the fact that the waxed silk only comes in contact with the exterior coils or covering of wire, and not with the strand of silk itself. The result is that occasionally the furthest end of the wire coil becomes loosened from the silk, the lapping being then held only by the compression of the waxed silk upon the coiled wire of the remaining one half or two thirds, and a sudden wrench is very apt to divorce them finally. To avoid this result it will be found best to pull off (or untwist) the wire from about one third the length of the

gimp to be lapped over, thus bringing the lapping in direct contact with the central strand of the gimp—or rather silk. The wire detached in this way can conveniently be utilised by a sort of preliminary whipping of the gimp to the hook-shank, which materially facilitates the subsequent process of lapping with waxed thread. In all gimp tackle it is very desirable to carefully varnish the hook lappings so as effectually to exclude the water, which is apt otherwise to corrode the brass.

The varnish already described at page 17 will be found an excellent varnish for the lappings of hooks and all other purposes connected with tackle-making Red and green varnishes, &c., can be made by dissolving sealing wax of the desired tint in spirits of wine.

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BAITS AND BAIT-CATCHING.

THE best natural baits for spinning for pike that I am acquainted with are either gudgeon or small dace. I say small dace because—leaving out of consideration some specially preserved English lakes and rivers, or the wide sweeping tracts of water which are to be found scattered over Ireland and Scotland—experience points to the advantage of a small-sized bait over a large one. It spins better, lasts longer, and is much more agreeable to fish with. With a small bait, also, the chances of hooking a fish are considerably increased, on account of the difference in the size of the flight of hooks that can be used, and the diminished pressure required to make them penetrate.

No bait actually spins so well, and—the eel-tail excepted—lasts so long on the hook as a gudgeon, and I confess that, except in cases where the water is very large or clouded, my experience leads me to give the preference to this bait over all others. Bigger baits with brighter scaling should, however, be used where waters are much swollen or discoloured. As a rule, it may be said that it is always safe to use a small bait when the water is low and bright, and a larger one when it is full or settling after a flood.

Next in merit to gudgeon and dace comes the bleak, a favourite spinning-bait also for Thames trout-fishing, but sadly delicate, and apt to lose its glittering bathing-dress upon the slightest provocation. A small chub makes a very fairly good spinning-bait, as does also a trout, a salmon parr, or smolt, a 'penk' grayling, and last, but not least, the tail of a small eel,

which, with a head extemporised out of a flap of the skin, will be found most deadly in many waters. It possesses also the great advantage of being almost 'unwearable-out.'

Amongst occasional spinning-baits I ought not to omit the stone loach, or 'beardy,' as he is sometimes called north of the Tweed, which, if you can get him big enough, will give a really brilliant spin, and makes an excellent substitute for the gudgeon as a pike bait in very fine waters. He is, however, almost impossible to keep alive, and, especially of the size I refer to, not indeed easy to get hold of at all. It is a case of 'first catch your loach.'[1] The mode of doing so is simply to walk into a stream with a small pronged dinner-fork in your hand and turn up the likely-looking stones. You will soon see when you have disturbed a loach, and, as he never swims beyond a few feet at a time, if, indeed, he does not remain *in statu quo*, as very often happens, you can easily track him, and then by a sort of eel-spearing operation, transfer him to your bait-box. For trout-spinning on a Scotch or Irish loch there is no better bait.

Any sea-fish that approximates to the 'dace shape,' such as bass or grey-mullet—which is not, that is to say, too broad in proportion to its length, and is sufficiently glittering—may be used as a spinning-bait. I have tried sprats and one or two others, but they did not succeed very well, as they seemed to have, one and all, a rooted aversion to remaining on the hooks for above a few casts. Of the other freshwater fish that might possibly be pressed into the spinner's service when nothing else can be got, and which, *par parenthèse*, nothing can ever make spin decently, are roach, rudd, carp, and goldfish.

I should think a small barbel would make a very good bait, but I have never tried it. Another bait also that I have never used myself for pike-spinning, but which I have been told is deadly under certain conditions of extreme fineness of water,

[1] The author of 'Lorna Doone' says that in the stream of Lynn, 'where, however, they were not quite so large as in the Loman,' he has taken 'loaches to the weight of half a pound.' From an eighth to a quarter of an ounce would be much more like the ordinary run.

is a minnow. Indeed, it was mentioned to me by Lord Harrington that he has a sheet of water in Cheshire containing some exceedingly fine pike which are not to be tempted with any other spinning-bait.

It has been recommended by some authors that spinning-baits should be allowed to stiffen before being used, and others have stated that the keeping them in salt, or 'pickle,' for a day or two improves their flavour. Certainly it has been well said, 'there is no accounting for taste!' Not only does a fresh bait spin better than a stale one, but the lack of elasticity and general 'flabbiness' of the stale bait to a great extent destroy its life-likeness, whilst its scales lose their metallic brilliance, and the eye—the most prominent feature in all spinning-baits—becomes shrunken and lustreless. Fish, as it has been truly remarked, are not aldermen, and, unless it be the eel, none that I know of prefer their food high.

If possible, therefore, spinning-baits, and, it is needless to add, live-baits also, should be *kept alive*, and carried with him by the troller. The bait-can, or other receptacle, can then be placed in the water from time to time, which reduces the chance of the theory of the survival of the fittest being worked out in a manner only too complete and unanswerable.

When, however, it is desired to preserve baits alive for any considerable length of time, they ought to be placed in a running stream, if practicable in a box not less than two or three feet square with free gratings in several places, and specially at both ends, the grated ends being anchored up and down stream. The upper portions of the box, also perforated, ought by rights to be partly out of the water, and the whole should be kept clean and well scoured from time to time. Dead baits should be removed from the box periodically, or as soon as discovered, and food in the form of worms, gentles, or chopped liver, scattered in every day or two. This latter is an important part of the business, as baits cannot live and thrive for any considerable length of time without food, although by their practice many fishermen appear to believe that they can.

To pass from spinning to live-baiting. Of the baits already recommended for the former, the dace will be found, on the whole, the best for live-baiting, except when the paternoster is used, in which case a gudgeon or large minnow is generally preferred. A roach or rudd also forms an excellent live-bait for large pike, and my experiences with goldfish and carp have been sufficiently encouraging to lead me to think that there are probably many waters where the goldfish especially might be found an attractive bait, and a few where none other would be looked at. Both goldfish and carp are very tenacious of life, and consequently fulfil satisfactorily the primary condition of a good live-bait.

The tench is also a very 'hard dier,' but there is a popular superstition that being a sort of water Esculapius, he is omitted from the *menu* by the pike and other predaceous fish. To this superstition I purpose to refer at greater length when treating of the tench himself as a sporting fish, and I would only observe here that although I have tried a good many experiments with tench as pike-bait, I have never succeeded in actually catching any pike with them.

A novel way of keeping baits lively when on the hooks, has lately been broached in some of the papers, and Mr. W. Oldham Chambers, Secretary to the National Fish Culture Association, whose labours in the field of fish culture and acclimatisation are so well known and highly appreciated, writes thus on the subject in the *Fishing Gazette* of October 25, 1884:—

BRANDY AS A FISH REVIVER.

I have continued my experiments in relation to brandy as a means of restoring suspended animation with quick-dying fish, the results being equally as satisfactory as with carp.

It was highly interesting to see the plucky manner a trout (*S. ferox*) battled with his fainting condition and came out the conqueror. Strange to say, the salmon (*S. salar*) did not once attempt to rouse himself after being dosed, the consequences being fatal to him; this was the only fish that succumbed under the treatment.

As regards the dace (*Leuciscus vulgaris*), I had him out of

water three times of five minutes each. He was exceedingly faint and almost dead; but immediately the brandy was given, he pulled himself together, and in the course of a few minutes not only recovered, but darted round the can with a rapidity positively amazing.

The result of the latter experiment tends in the most conclusive manner to show to anglers the great value of a judicious administration of brandy to a dace prior to being used for bait.

How often have we felt the want of a nice lively dace when on the warpath for pike? To have the means at command of not only restoring an inanimate bait, but also increasing its strength and vigour, will be of much service to the angling fraternity.

Since the above, letters have appeared from trollers stating that excellent results have been obtained in practice by 'Dutch-couraging' their live-baits.

In order to give baits their best chance of surviving without the artificial aid of brandy and water, it is well that the hands of the troller should not be frequently inserted in the bait-can, as this has the effect both of raising the temperature of the water, and frightening, if not also bruising, the live-bait. The latter should be taken out with the miniature hand-net sold for the purpose, and killed as required. The most instantaneous and effectual way of doing this is to give them two or three sharp 'flips' with the finger, or, in the case of large baits, taps with a small stick, or else the handle of a fishing-knife, on the back of the head until all sign of motion ceases. The first tap or two, however, when scientifically delivered, generally stuns them completely, and the death thus inflicted is probably absolutely painless.

To keep the baits lively and well, however, until the fated moment, is not only humane, but eminently judicious from a practical point of view. Failing a punt with a 'well' in it, which is in every way the most luxurious arrangement, there remains, of course, nothing but the bait-can. As in many other branches of fishing-tackle—using the word in its broader sense—there have recently been made great strides towards the perfecting of this very important *desideratum*.

The first improvement was the addition of a second, or internal, can, consisting of a movable zinc grating with a separate handle, by which the extraction and selection of the baits were vastly simplified. This appliance effects a great saving of time, besides avoiding the probability, as someone observes, of poking out the bait's eyes with the operator's thumb-nail.

Another step in advance—for which I rather think I may be myself possibly entitled to the credit—was the addition of a double lid, and the construction of the bait-can *pannier-shape*, so that it could be carried by a strap, like an ordinary creel, over the troller's shoulder when fishing alone.

The most important point in a live-bait can being, of course, that it should be so constructed as to keep the bait alive, the double lid was a move in the right direction. It had the effect, at any rate, of keeping out the sun and keeping in the water. The absence of a second lid often causes or accelerates the death of the baits in hot weather. When the weather is cold its presence will preserve the legs of the carrier from a perpetual sprinkling of half-frozen water. The convenience of being able to carry the bait-can in the manner described should, I think, be appreciated by those who do much pike-fishing without an attendant. It makes, in fact, in many cases the entire difference between comfort and discomfort. Carried in the troller's hand, the choice lies between, on the one side, stopping fishing and carrying the can along with him, or, on the other, of leaving the can behind and continuing fishing. In the latter case the whole of the river bank has to be traversed three times, once backwards and twice forwards.

My can, which is figured in several previous essays, can be comfortably carried without much inconvenience, and relieves the angler from the choice between Scylla and Charybdis. Its effect, too, as an auxiliary to aeration, in other words as a bubble-distributor, is also not to be overlooked.

As regards the double or interior bait-can, I am sorry I am unable to give 'honour where honour is due' for this very excellent invention, but I do not know who it was that first

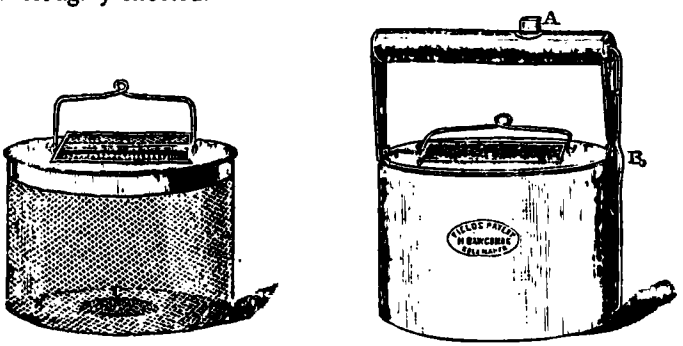
conceived the idea. Mr. Basil Field, whose admirable bait-can I shall presently have to refer to, has frankly disclaimed the authorship. He says he first saw the principle applied to the minnow compartment of a punt-well some forty years ago, and shortly afterwards to an ordinary bait-can—a lady's basket doing duty in this instance for the perforated chamber. In another instance an inner lining was made of net extended on a wire frame—a cheap and useful makeshift which may be recommended to those who do not wish to go to the expense of a new can. Mr. Field adds that he himself constructed an internal can out of a biscuit-tin at least twenty-eight years ago, and remembers the fact by having cut his hand badly with the edge of the tin whilst punching the holes.

The drawback to both my double-lidded can and the other improved can described is that they have no apparatus for aerating the water, by which means alone the baits can be kept alive during a whole day. The only attempt I ever saw made to meet the difficulty was an indiarubber 'squash-ball,' fitted with a valve and a piece of tubing that could be carried in the pocket and introduced into the bait-can from time to time. At best, however, this was a very imperfect and inconvenient appliance, and in practice seldom resorted to. We are indebted to Mr. Basil Field for a bait-can in which the aerating apparatus —being contained in the handle of the bait-can itself—can be used with the utmost facility and effectiveness while the can is being carried. The keeping of the baits alive all day is of even greater importance to the troller than the inconvenience of having to carry them backwards and forwards; and taking it altogether Mr. Field's invention is indisputably at present the best description of can obtainable. Whether or not it might be improved by, in some way or another, adding a double lid and a shoulder strap, is a question; but, on the whole, I should be prepared to face the chance both of dripping and delay in exchange for the pre-eminent advantage of being able to keep my baits alive from morning till night.

The engravings represent the two parts of the can

separated, and the position of the bellows and air-conducting tube.

When grasping the handle of the can in the act of carrying, the handle, so to speak, of the bellows (A) can be easily and naturally worked by the thumb. The air pumped from the handle is conveyed down a small tube (B) into the bottom of the can, so that the aeration of the whole of the water must be thoroughly effected.



FIELD'S AERATING BAIT-CAN.

It is satisfactory to learn that a Diploma was awarded by the late Fisheries Exhibition to Mr. Basil Field for his admirable invention, for which the thanks of all pike-fishers are due.

The cans are made at present in two sizes,—1 gallon and 1½ gallon—and may be obtained from Mr. Henry Bawcombe, 2 Victoria Road, Holloway, N.

For the catching of most of the so-called coarse freshwater fish used as pike-bait already described, the ordinary circular casting-net, familiar to haunters of the Thames, will be found the most convenient implement. Some considerable aptitude and not a little practice are, however, required in the use of this net, and if the caster does not wish to be soaked through to the skin in a few minutes he is recommended to take the precaution of putting on an old waterproof to receive the net-drippings instead of his own garments.

It will often be found of assistance to expend a few handsful of ground-bait in attracting fish to the spot which the caster can most conveniently cover with the sweep of his net. I have also heard of glass bottles filled with fresh roses being used for the same purpose, though I do not vouch for the success of this novel sort of horticultural show. In the casting for Gudgeon 'raking' the bottom is often a good expedient.

The modern casting-net was, there is good reason to believe, similar to or identical with the amphiblêstron, or casting-net of the ancients. A fisherman with net in hand and just about to make his cast was one of the figures on the shield of Hercules, whose attitude was thus described :—'And on the land there stood a fisherman on the look out, and he held in his hands a casting-net for fish, being like to a man about to hurl it from him.' Or as it has been versified—

> On the crag a fisher sat
> Observant ; in his grasp he held a net,
> Like one that poising rises to the throw.

The Latin names for the casting-net were *jaculum* and *funda*, each of which terms etymologically explains its use ; thus Ovid writes,—

> Hi jaculo pisces, illi capiuntur ab hamis,

and Virgil uses the latter name—

> Atque alius latum fundâ jam verberat amnem.

The Greek term to denote the cast was *βόλος*, from *βάλλω*, 'to throw.' The Romans used their casting-net, it is probable, in a manner not dissimilar to the Greeks ; and they had the same term to signify 'the cast,' *bolus*. There is a very amusing passage in Plautus, where Dinarchus compares the dangers of love and its allurements to fish caught in a casting-net :—

> Quasi in piscinam rete qui jaculum parat :
> Quando abiit rete pessum, tum adducit sinum.
> Sin jecit rete, piscis ne effugiat, cavet :
> Dum huc dum illuc reti eos impedit
> Pisces, usque adeò donicum eduxit foras.
> Itidem est amator.—(*Truc.* act i. sc. 1.)

'Just like a man who throws his casting-net into a fish pond; when the net sinks to the bottom he contracts his folds, and when he has made his throw he takes care that the fish do not escape, whilst the net entangles them in all directions in its meshes till he land them safely; so is the lover.'

From this passage it is pretty clear that the *jaculum*, like the ἀμφίβλησστρον, must have been nearly identical in form and manner of use with our own casting-net.

The landing-net was also employed by the ancient fishermen, its Greek name (ὑποχή) sufficiently explains its use; it was provided with a hoop at the top, and fastened to a pole or rod. The material of which nets were made was flax (*linum*), hence that term is employed to denote a net—

> Pelagoque alius trahit humida lina.
> (VIRG. *Geor.* I. 142.)

but hemp was also sometimes employed.

In private waters a small meshed sweep or seine net may often be used to the economy of time. On public waters, however, this sort of net, which is quite as apt to catch big fish as little ones, would, of course, be out of the question. I shall never forget a comical incident which happened to my friend, Frank Buckland, when we were once catching baits together in this way in water belonging to Sir Edward Hulse. I must tell the story, however, in his own words:

'The keeper and I got the net out—and a famous big net it was—and, then, making a sweep, we surrounded the pool, letting it out from the stern of the boat as we punted along. The keeper then put on his waterproof boots, as we had to wade the rest of the way. I got out into the water just as I was, with him, and we both hauled away at the rope. When we were about half through the distance, and the keeper was hauling the rope towards him, and I had got it over my shoulder, both pulling might and main in opposite directions, the rope broke off short in the middle. The keeper went flat down on his back in about three feet of water, and disappeared

among the weeds, floundering like a great porpoise, while it took a header forwards into a deep hole.

'We both got a sound ducking, and were rewarded only by shouts of laughter from Pennell, the miller's family, and two policemen, who came with the instinct of their species, and were glad to get something to look at in a country where their exertions are amply rewarded by one prisoner a month. I myself did not care a rap for the wetting—I had on all flannel, and soon got dry again. The keeper, however, drew a long face, for he was subject to the "rheumatics," and had put on his water boots in order to keep dry!'

Unluckily river keepers and water bailiffs are not the only sufferers from rheumatism, neuralgia, and the other ills that flesh, or rather 'fish,' bear in their train, and until the fulfilment of the Scotchman's wish that lake and stream were all 'one half Glenlivat,' I fear there is no royal road to escaping them except by a careful use of waders, which are too often considered as inconvenient superfluities by enthusiastic young men in the

Mid might and flourish of their May.

The youthful fisherman, and especially the salmon fisher, disdains the counsel of older experience, and acts as if for him the 'sere and yellow leaf' time can never arrive, or if it does, it will be when he is too old any longer to care about wielding the rod. This is of course a double mistake, because, in the first place, we may by reasonable prudence postpone, or by rash foolhardiness ante-date our old age, and in the second no one ever thinks of giving up his favourite sport because *Anno Domini* tells him he is well on the downhill road of life. On the contrary, the passion oftener than not grows in growing years. 'Once an angler always an angler,' has long been proverbial, and are we not all familiar with the half comic, half tragic picture of the old bedridden enthusiast, with his rheumatism-racked legs swathed in blankets, fishing for roach in a tub by the fireside? Depend upon it many a strong man has had *nolens volens* to lay by his salmon rod and shoulder a crutch instead,

long before the arm-chair age ought to have arrived, solely because he was too headstrong or too stupid to practise a little prudence and adopt a few common sense precautions in the 'days of his youth.'

Though not yet an old man, I have lived long enough to already regret the folly of many an early recklessness. Like other naturally hardy young fellows, I never used (on what may be called the cast-iron-constitution theory), to bother myself about 'wading boots and all that sort of molly-coddling,' and thought it half the 'fun' standing up to my waist in water all day, with perhaps a few intervening 'duckings,' begotten rather of superfluous rashness than of reasonable necessity.

'Or again when I had been trolling and got my own or a friend's best flight, or my last bait, well hitched up in the flags under the opposite bank of the Avon or the Stour, not once, but scores of times I have retrieved the situation by swimming and remained damp for the rest of the day. The last time I committed this *bêtise*, was, as I well remember, some three or four years ago when spinning late in the autumn on Mr. Banks' water on the Stour. It was a nasty chill raw October or November day, and my friends on the bank thought I should never get across, so cold and strong was the stream, and so thick the weeds and other obstructions. As a matter of fact I just did it and that was all; I saved losing my last spinning-bait—and caught a chill which I verily believe will give me occasional reminders to the end of my days. Another wise performance of years gone by was shooting a Thames weir in flood time, in tubs of such size and make as to practically ensure a capsize, the fun being to swim out again with the boat, empty it, and carrying it above the weir, repeat the performance 'till further orders.'

'Flood time' on the Thames, means generally the time when even swimming in a more common sense fashion should be abjured; what was likely to be the result in the way of stored-up rheumatisms and neuralgias of this original and striking development of the art?

The result was, or rather is, that for the last five years I have suffered a periodical martyrdom which for the time being makes river and coverside alike out of the question. Indeed, in giving this advice to my brother fishermen I do so with a full *connaissance de cause*, as I write these lines in the train which is bringing me back, for this reason alone, and much against my will, from a good day's cover shooting to medical rubbers, Turkish baths, and similar consolations for the afflicted! . . . Let me once more then, 'as one who knows,' sum up the foregoing cautions: Flee damp legs, cultivate not promiscuous duckings, eschew watercourses without waders, and wear flannel next your skin.

But to return from this digression suggested by our efforts to catch bait with that very convenient (if it be not rotten) implement, a sweep net:—

For minnow-catching the ordinary form of net is circular, from a foot and three-quarters to two feet or so in diameter. It is suspended from a pole by strings, like the parachute of a balloon, and, being decorated with a few bits of red wool, or cloth, to excite curiosity or avidity, it is lowered gently into the middle of a shoal, and as soon as the minnows are seen over it in sufficient numbers, the net is swiftly and strongly raised to the surface, usually bringing with it a proportion of the intending diners or investigators.

If from any cause the spinner cannot carry his baits with him alive, the best plan is to wrap them up, immediately after being killed as before described, in the folds of a soft damp, cloth—a housemaid's duster answers the purpose very well—which should be remoistened whenever it shows symptoms of dryness. I would recommend this method, in preference to the 'dry bran system' advocated by many authorities, as being both more convenient and maintaining better the elasticity and brightness of the baits. Salt or brine is fatal, as the fish rapidly become flaccid and lose every attractive quality which it is desirable that they should possess.

Many plans have been tried, and, indeed, I have tried many myself—such as brine, dry salt, oxalic acid, &c.—to preserve fish-bait in a perfect state for use, and so as to keep for at least a few weeks. I have also tried having them packed (soldered up) in sardine boxes with methylated spirits of wine; but even that was only a partial success, and with this exception none of my own experiences, nor, so far as I am aware, those of other experimenters, have been entirely satisfactory. Some of them, however, will be found in the 'Book of the Pike' (5th edition).

The sardine box experiment did certainly produce bait which would kill pike, not by any means so well as when fresh, but well enough probably to make a basket in most waters the occupants of which are not over-pampered or fastidious. There is another exception to the non-success of preserving baits, in the case of the eel-tail before alluded to, which, probably owing to the nature of the skin, instead of becoming soft and flabby as other baits do when 'pickled,' becomes, on the contrary, additionally tough, and if packed in plenty of *coarse dry* salt, either in a jar or other receptacle, will keep, in my own experience, for four or five weeks and probably much longer. The salted eel, before being used, should be allowed to soak in fresh water for ten or fifteen hours to restore its plumpness and elasticity. In fact, so admirably does the salted eel-tail fulfil every requirement which the most exacting could demand that it may be said to partially solve that *vexata quæstio*, the Great Preserved Bait Problem, which has occupied so often and so long the attention of writers on fishing and of the sporting papers, and in which the comfort of the pike-spinner is so materially concerned. I must repeat, however, that it solves it only partially. It only solves it in regard to those waters in which the eel-tail bait can be used successfully, and they are by no means all or nearly all. Indeed, I have known some rivers, like the Avon in Hampshire, in which, when first tried, it succeeded admirably, but where, from some unexplained reason it is now no longer a killing bait, whether salted or fresh.

Perhaps I used it at different seasons of the year, or perhaps when the eels were on the run, and when the pike were looking out for them; or perhaps when eels were not running and, consequently, somewhat of a delicacy. Unfortunately, my notes do not show all this, so I can only state the bare fact, without attempting any theory to explain it.

No doubt we have other instances, like that of the spoon-bait, where the 'sensation' has certainly seemed to wear off after the fish have become accustomed to the novelty. Considering, however, that enough salted eel-baits can be carried in a small box or bait-can to last the spinner easily for a week, and that these can be kept and used again if not wanted, it would seem to be worth while where there is any difficulty in procuring fresh bait, to give the salted eel at least a trial.

Here is a prescription for preserving whitebait discovered by Mr. Rolfe, and mentioned by Mr. Greville Fennell in the *Field*. It certainly 'sounds well,' though I should have thought whitebait likely to make the tenderest rather than the toughest of baits, whether fresh or preserved. In other respects the fish would, no doubt, prove attractive as a spinning-bait, as its scaling is brilliant, and its shape not much unlike a bleak :—

One day when he had tried in vain for bait at the tackle shops, Mr. Rolfe saw some more than usually large whitebait fresh from Gravesend. Selecting the biggest, he popped them into a wide-mouthed bottle of methylated spirit. He was thus independent, and equipped for the occasion, finding them not only excellent substitutes, but in every respect superior to any bait to which he had been used. At the opening of the present trouting time this bottle of bait turned up with the tackle, and Mr. Rolfe's surprise was great indeed to find that these whitebait, instead of turning grey and black and losing their brightness, as minnows, &c., do, were not only as silvery as the day they were caught, but had acquired so extraordinary a toughness that, he assures me, he has taken three and four fish with a single bait. Why the methylated spirit should have these gratifying effects upon saltwater fish, and deteriorate those of fresh water, I leave to longer heads than mine to determine. If it is the addition of a trace of salt, the experiment might be tried

upon the latter with good results where whitebait is not to be had. Nor should I omit to state that the whitebait plumps out after being removed from the spirit and coming in contact with the fresh water.

Upon learning these facts, I at once communicated with the Gravesend fishmongers, who tell me that the larger 'whitebait'—some of which are from two to four inches long—are picked out as not saleable in the London market, and that if there was a demand for them almost any quantity might be had at a nominal price. My calculation shows that any one or two persons entering into this little speculation might make a considerable profit by selling bottles of these prepared bait to the tackle shops, or supplying them direct to the angler. Certainly a bottle with fifty bait therein might be sold for a shilling, and leave 100 to 200 per cent. to their credit.

Since writing the above, I have been trying the experiment how long the whitebait will keep fresh out of the spirit after perfect saturation therein, and I have carried about with me a few, both loose in my waistcoat pocket and in an envelope, to show to friends, when now, after ten days, the bait appear as good and sweet as ever, the air apparently not acting the least upon the silver colour of the scales, and indeed it is difficult to rub the scales off with the finger. These whitebait can be got at least six months in the year, and if the size or sizes required were given on paper to a fishmonger, he would, no doubt, get them for a customer a day after they were alive. It is curious that several other spirits I have tried have not the hardening and preservative effect of the methylated.

Mr. Rolfe used these baits for trout-spinning, but if they will do for trout they will do for pike, especially if, as stated, they can be procured of the length of four inches.

The fresh eel (and tail) makes an excellent spinning-bait, tough and enduring, although not quite so long-lasting as that which has been salted. It has the advantage of being obtainable at almost any pond, river, or canal by simply setting a 'night line' baited with worms. The line, however, must be taken up early in the morning, as, if allowed to remain long after sunrise, the major part of the eels will escape.

I have used fresh eel-bait dressed in a great many different fashions, from the whole eel (where the latter is not above

seven or eight inches long), to six inches or so of the tail cut off a larger specimen. In this case the eel from which the bait is taken is best rather small, and should not, for ordinary river and lake spinning, exceed a foot and a half in length. For great lochs, like L. Corrib, where pike are scarce and run sometimes to an extraordinary size, larger eels may be used with advantage. When the eel is longer than seven or eight inches one of the best forms of spinning-bait may be constructed by cutting out just below the neck (after skinning) a piece of from three to six inches according to circumstances, the head and tail being then sewn closely and carefully together with strong holland thread, or, better, thick red silk. Owing, however, to the giving way of the lips after some little wear and tear, the 'natural headed' eel-bait is, on the whole, less convenient, though, perhaps, occasionally somewhat more attractive, than the bait made from the tail part only,—an artificial head, which never wears out, being formed, as before observed, out of the skin.

In order to form the head, skin the eel backwards towards the tail as far as the point where the bait is to commence. Then tie it tightly round, above the flesh, with waxed holland thread and cut it off to within about half an inch of the ligature; turn the half-inch flap downwards over the ligature, towards the tail, and then stitch it carefully down to the lower skin.[1]

Either of these baits can be used upon the spinning-flights described further on, or any one of fifty different arrangements of hooks can be applied, according to the ingenuity of the troller and the size of the bait. It is to be observed that the original trouble in making these baits is amply compensated for by the

[1] To skin an eel: Having first completely killed the eel, which is most easily and humanely accomplished by dashing it down upon the floor or upon a stone, make a circular incision through the skin below the pectoral fin. This is best done by passing the blade of a sharp penknife under the skin, bit by bit, in a circular direction. Then pin the head of the eel tightly down to a kitchen table with a steel fork, and having got hold of the edge of the skin with the finger-nails, turn it, or rather pull it, down a little way; now take hold of it with *a dry cloth*, and it will generally peel backwards with ease.

fact, first, that it can be done in the house before starting; secondly, that, with moderate care, one bait will often last a whole day; and, thirdly, that a great saving of time is effected by not having to put on fresh baits after every run,—a circumstance of great importance when it is remembered that pike, like other fish, have a knack of coming on the feed only at certain times, and frequently but for a very short period during the day.

I have referred to the large size of the eel-baits which may occasionally be used with good results in wide ranges of water where pike are known to be of exceptional size. In Lough Corrib, in Galway, for example, some forty miles long, I have often killed large pike both with the eel-tail and with the whole eel, weighing over half a pound, although I was never so fortunate as actually to 'bag' anything of extraordinary dimensions. Local tradition is, however, rife with accounts of pike of fifty, sixty, and some seventy pounds weight, which have been periodically taken out of this inland sea, and from what I have seen, and *felt* myself, during many weeks of fishing in its waters, I can well believe it. Indeed I have little doubt that I have more than once had hold of these monsters, though I never brought one to bank; but, of course, in the case of such fresh-water sharks, with teeth like bull-dogs, the odds are really very much in favour of the fish.

I recollect once, when spinning under the north shore, not far from the 'Cut,' in a deep bay surrounded by walls of bull-rushes, suddenly finding that my spinning-bait—a whole eel of about half a pound weight—was fast—very fast indeed—in *something*. From the perfectly passive, and at the same time utterly unyielding nature of the resistance, I concluded I had got hold of a rock or submerged stump, though how such should be found in water which I knew to be twenty feet deep at least was somewhat unaccountable. I had very powerful new gimp tackle, a strong line, and a stout rod, and I spared neither in my unsuccessful attempts to get clear,—still without the slightest signs of the obstacle, whatever it was,

giving way. Suddenly my bait began quietly, perfectly quietly, to *move away*! 'Hughes!' I shouted to my trusty henchman, 'Hughes, it is a fish! I believe I have hooked leviathan!'
At that moment the line came quietly home, without an effort or struggle, and without—the flight. The new gimp was apparently cut through as with a pair of scissors.

To rig up a fresh flight—this time of *double* gimp—was the work of a very few minutes, and another eel-bait, still longer than the first, was soon in the water. Almost immediately I was fast again in the fish, who pursued precisely the same tactics as before—at first remaining motionless, and then after a little while moving off without struggle or commotion. And after the display of about the same amount of vitality as before, once more the line came back to my hand with the doubled gimp neatly and cleanly severed a few inches above the bait.

I fished the water over again, and again next day, but never saw anything more of my conqueror, unless, indeed, a vast 'wallow' a few minutes later on the surface of the Lough some eighty yards away, was an indication that he was 'there,' and probably trying to rid himself of his recent dinner. . . What this fish actually weighed can, of course, only be a matter of conjecture; but I have had some experience of the 'ways' of heavy fish, both pike and salmon, and I have always believed that on that occasion I lost the chance of basketing the biggest pike of my life. These Lough Corrib pike fight like demons. I remember my wife catching one that weighed only thirteen pounds, and in his struggles to make for home—a rush bed about eighty yards off—he actually towed the boat a good many yards in that direction before he was basketed. We all thought at first from his style of running that it must be a salmon.

When it is absolutely impossible to procure natural baits of any kind, resort must, of course, be had to artificial baits, of which, however, it may be said that for the most part they are made to catch fishers rather than fish.

A mere enumeration of the endless varieties of artificial pike-baits brought out by tackle-makers during the last ten or twenty years, would demand a chapter to itself. Besides the better known, or, so to speak, 'more generally recognised' varieties, such as phantom minnows, archimedian baits, &c., there are whole tribes of 'water-witches,' 'kill-devils,' 'Beelzebubs,' and the like. Their name is legion; and so far the last two patronymics, at least, seem not to be altogether inappropriate. Indeed the names of artificial baits are very commonly their sole recommendation; their merits exist only in the imagination of their inventors or the puffing placards of cheap tackle-vendors. Indeed, like the heroes of the celestial empire, whose splendid qualities, inscribed on their backs, cannot be perceived until they run away, the best points of artificial baits are really discovered by their purchasers only when they have seen 'the backs of them.'

So far as my experience goes, artificial baits—and I have tried a good many of them—are altogether inferior to natural baits for pike fishing. It is only when the latter are exhausted, or cannot be obtained, that the former should be resorted to.

In addition, however, to the difficulty of the enumeration, before alluded to, there is, as I observed in the 'Book of the Pike,' a still further reason for relegating the subject of artificial baits and their selection to the appreciation of individual anglers—namely, that the 'fashions' appear to be perpetually changing. The fashions, I mean, not amongst the catchers, but amongst the caught. Fish tastes in such matters last apparently about as long as a lady's for her last new bonnet. The bait found most killing on some particular water or river one year may probably be superseded by a different one the next, and unless a new edition of this book were called for every six months—a luxury that even the most sanguine author can hardly calculate upon—the information which it might give of these *ephemeræ* would be constantly becoming obsolete. The 'spoon-bait,' for example, created quite a *furore* when it first came out, but it seems of late years to have lost its attractive-

ness, at any rate on waters where it has been much used, and is now usually inferior even to the ordinary run of artificial baits.

Moreover, the life of no single pike-fisher would suffice to fairly test them all for himself, even had he as many arms as Briareus; and without aspersing the character of anglers, they, like other sportsmen, are credited by the Philistines with occasionally 'adorning' their experiences, so that when one reads that Mr. Blank succeeded in catching 5 cwt. of pike in five hours with Mr. Dash's patent 'satanic tadpole,' the statement fails to carry to our minds the absolute conviction desirable. At any rate we don't all rush off to Mr. Dash's and invest in satanic tadpoles on the strength of it.

Seriously, however, we know how constantly even a slight unintentional exaggeration will alter the facts of the case, and how easily omissions or additions, slight in themselves, vitiate the conclusions based upon them. My own experience has so far failed to confirm the flattering things I hear and read about the merits of modern artificial spinning-baits; though it must be admitted they are often exceedingly pretty and ingenious.

In order to be in the fashion I once thought I would invent an artificial bait myself, and my plan possessed, at least, the merit of simplicity:—I took a medium-sized bleak to a practical worker in mother-of-pearl, and told him to imitate it *exactly*, scales and everything. For this purpose he was to use two separate pieces of mother-of-pearl for the two opposite sides so as to get the full lustre of the shell on both. These pieces were rivetted on either side of a thinnish brass plate, the tail, back, and anal fins being represented by corresponding excrescences on the brass, and, in the case of the two last named, the brass serving as points of attachment for two flying triangles linked to them with small steel rings. The 'spin' was got from the tail by turning the ends of the brass in opposite directions. Nothing, I must say, could look more tempting and life-like, and hope beat high as I carried the beautiful creature to the river-side, and debated by what appropriate name it should be

christened. Unfortunately my inventive genius was not destined to be tried. Almost at the first cast I hooked a large fish, which very inconsiderately left me—and alas! my fascinating creation also—in a stout bed of bulrushes. . . I have never had energy enough to have another one made, though—stimulated by the passing success of having nearly caught a fish I have often meditated doing so.[1]

On one occasion, being driven to extremities for baits small enough to spin with, I concocted a sort of 'composite' bait with which, on several days, I had very good sport in the Hampshire Avon. The bait was made thus:—I cut off the tail part of a dace (or even a roach would do) just at the vent, leaving the flesh Λ shaped, the apex to form a sort of holding-on-point for the head. This latter was of tin, in the shape of an extinguisher, having several holes close to the rim through which I stitched it on to the bait, sewing it strongly through and through. On each side of this 'head,' but longer, were wings, to represent the pectoral fins, also of tin, soldered on, and turned up at different angles on opposite sides, so as to give the bait a brilliant spin. I caught, as I say, a great many fish with this bait at first, and had a large stock of the head 'extinguishers' made: but the second year that I tried it over the same water, it did not do so well, and I seldom use it now except when no small baits are procurable. I give the idea, however, for what it is worth: it may be worth trying at a pinch, and any tinsmith can make a 'head' for it in ten minutes.

[1] Since writing the above, in looking over an old tackle box I have accidentally come upon what seems to be a duplicate, or very nearly so, of what I may christen my 'exact imitation bait.' I always thought I had the worst memory in Europe; I am beginning to think I have no memory at all. This bait must have been made at the same time as the other, the only difference I see in it being that it is a trifle less plump, and that the scalure is marked more coarsely; that it is not, in fact, 'drawn to scale.' I think the scales ought to be cut on the mother-of-pearl much smaller to carry out the imitation idea, or, in fact, as nearly as may be, the same size as those of actual fish. I have given this bait to Mr. Farlow, of 191 Strand, as a model in case any of my brother trollers might like to give it a trial as an experiment, observing that I do not in any way vouch for its success, and that my experience is absolutely confined to the one cast already described.

The best 'flight' to use with it are two flying triangles of different lengths, the gimp being pushed upwards and through a hole in the apex after the 'head' has been sewed on, or before if preferred. In the latter case the flying triangles can be made to stand out on opposite sides by means of the stitching. I forgot to say that I 'bronzed' one half the head—the half coming next to the bait's back—with Brunswick black.

Every spinner will be wise to carry in his trolling-book at least one or two imitation baits in case he should find himself left without natural ones.

With all artificial baits it is a good rule to remember that fish should be struck the very instant they take, as the first feel of the bait between their jaws is apt to undeceive them as to its true nature, and the next instinct is that of summary ejection.

Amongst 'recognised' artificial pike-baits which demand a passing notice in taking leave of the subject, I should here mention perhaps the 'pike-fly,' which, like the 'spoon-bait,' has become to some extent historical. I cannot help thinking, however, that it is rather entitled to a niche amongst the curiosities of angling literature than to a place in the troller's equipment for actual campaigning. My friend, the late Mr. Stoddart, whose charming books have given delight to at least two fishing generations, places on record a very similar expression of opinion. 'I used,' he says, 'to practise it (pike-fishing with the fly) with tolerable success in a shallow loch in Fife; I have also tried it in Perthshire, but the result of my experiment with the pike-fly is a conviction that it is not a lure at all attractive to large or even middle-sized fish.'

The pike-fly is also occasionally used in the Norfolk broads, and it is fair to say that according to written testimony[1] the experience of Norfolk trollers, whilst more favourable to the pike-fly, is exactly opposed to that recorded by Mr. Stoddart. The writer in the *Field* to whom I refer alleges that in Norfolk, large-sized pike frequently take it freely when none

[1] *Field*, July 24, 1865.

over six pounds can be caught with the natural bait. The same writer says that he has not unfrequently killed pike with the fly on bright clear days when spinning was utterly useless.

Pike-flies are generally about the size of a large Shannon salmon-fly, and it is supposed that they cannot be too gaudy, even if—which 'many authorities doubt'—they can be dressed too big.

I must frankly say that the only pike I personally ever caught with the fly was taken when fishing for chub on the Thames, the fly being, if I recollect, a small black palmer.

The orthodox pike-fly I have tried on just some such waters as those described by Mr. Stoddart, on Loch Lochy, amongst others, in the Caledonian chain; on Slapton Lea, Horsea Mere, of pike-fishing celebrity—'Horsea pike, none like,'—and in other apparently likely places, but uniformly without catching anything.

Although the pike has long since been christened the fresh-water shark, thus establishing some sort of family connection, it may be presumed, between *esox* of the river and his salt-water cousins, we should hardly have thought of finding a parallelism between them in their willingness, under certain conditions, to be lured to destruction by the artificial fly. Yet such it appears is actually the case, according to some notes recently published by an American traveller.

PIKE FISHING.

SPINNING.

Adjusting, swift, a tendon to the line,
They throw, then drag it glistening through the brine.
GIANNETAZZIO.

THE most popular as well as the most 'sporting' form of pike fishing is spinning. Taking the average of waters and weathers throughout the year it is probably also the most killing. It may, no doubt, happen that in particular waters, or states of water, the live-bait will kill more fish or possibly bigger fish, or that the growth of weeds may be such as to make the pond or river literally and physically impenetrable to anything but a gorge-hook. These conditions are, of course, a law unto themselves, and, however great the preference that may be given to spinning, no troller in possession of his senses needs to be warned against casting his bait deliberately into a well-matted bed of water-lilies. Such contingencies are, however, the exception rather than the rule, and, as I before observed, taking the average of waters and weathers throughout the year, it may be safely assumed that the spinning-bait will bring to basket three fish for every two taken by any other of the ordinary systems with rod and line.

I have pointed out in the 'Modern Practical Angler' the causes which probably combine to produce this result; 'The *piquant* effect of an apparently wounded fish upon a pike's appetite; the concealment of the hooks by the bait's rotary motion; and last, not least, the great extent of water which may be fished in a given time.' Add to this the almost uni-

versal applicability of spinning to all countries and climates and it must be admitted that it fully justifies the high position in piscatorial precedence awarded it by most modern authorities.

That the pike mistakes the spinning-bait for a maimed or disabled fish there can, I think, be little doubt. No one who has watched the gyrations of a 'mad bleak,' as it is sometimes called, jumping and twisting about on the surface of a stream, could have failed to notice the resemblance between the two. The propensity of all animals, and of fish in particular, for destroying the sick and wounded members of their own species is less amiable than it is indisputable. As an illustration of this I may mention that when I was spinning with a gudgeon over a deepish part of the Thames below Hurley Weir, a second gudgeon hooked himself *fast through the lip* whilst, it can only be supposed, intent on attacking the first.

The origin of spinning, as we understand the word, has often been discussed and disputed. The first distinct mention of it that I remember to have met with occurs in Robert Salter's 'Modern Angler,' the second edition, which was published in 1811. Even as late as Bagster's second edition of 'Walton's Angler,' in 1815, the existence of the art is rather hinted at than described. I quote the following from the 'Book of the Pike':—

'On the Continent some sort of spinning seems to have been known even earlier than the times of Walton himself, for his contemporary, Giannetazzio, writing in 1648, thus alludes to the art as practised by the Neapolitan fishermen for the benefit of the belone, or sea-pike, a fish of the same family as our fresh-water pike, and formerly included in the same genus:

> Burnished with blue and bright as damask steel
> Behold the belone of pointed bill;
> All fringed with teeth, no greedier fish than they
> E'er broke in serried lines our foaming bay.
> Soon as the practised crew this frolic throng
> Behold advancing rapidly along,
> Adjusting swift a tendon to the line,
> They throw, they drag it glistening through the brine.'

But no definite account of the process, as we practise it, appears to have been given by any of our countrymen before the time of Robert Salter, and to him, therefore, must be awarded the credit for the first substantial improvement in dead snap fishing, so far as pike are concerned.

Since Robert Salter's time a great deal of ingenuity has been expended on improving Hawker's, formerly Salter's, spinning-tackle—in which it may at least be granted that there was room for ample improvement—with the result that the difficulties in baiting the old flight were to some extent at least overcome by an improved style of 'lip hook,' and by transferring the position of the lead from the bait's head or belly to the trace itself. These improvements proceeded, however, in almost every case upon a principle which involved the crowding of a great number of hooks on to the inside curve of the bait—a principle not only destructive to its spin and durability, but also entailing the loss of a large percentage of the fish run. A modified example of one of these revolving *chevaux de frise* may be seen in the flight recommended by 'Ephemera' in his 'Handbook of Angling, &c.,' and which he proposes to substitute for the ordinary flights as being 'too intricate and composed of too many hooks.' His own flight consists of eleven, including three triangles! This is also the flight recommended by Hofland, 'Otter,' and many others.

Another drawback to spinning was the 'kinking' or, untechnically, crinkling up, of the line owing to want of thought and a little application of mechanical principles to the subject of the swivels and leads, and especially to the position of the latter on the trace. This 'kinking' used to be the veritable curse of spinners. I have often been reduced by it myself to the verge of desperation, and, indeed, I have known cases where, rather than submit to it, spinners have been willing to sacrifice altogether the convenience of a reel, and to trail their running line behind them in the grass, which had the effect of taking out the 'kink' at one end as fast as it was imported at the other.

And I would remark here, in passing, that if, in spite of the new lights, or, more accurately, leads, which have been thrown on the subject, the troller should from any cause find his line beginning to 'kink,' the best and, indeed, only practical remedy that I know of is either (1) to adopt the plan above suggested, affixing to the lower end of the running line a small cork ball to prevent its passing through the rod-rings, but not sufficient to prevent its twisting in the grass upon the slightest provocation; or (2) where it is probable that the "kinking' may be only accidental, to draw out twenty or thirty yards of line from the top of the rod and trail it once or twice backwards and forwards over a grass-field. To return.

The faulty construction, then, of the spinning-flight and the inconveniences of 'kinking' were, no doubt, the principal obstacles in the way of spinning becoming the prevalent and popular method of jack fishing.

Such being the state of the art as regards the spinning-flights, there was plenty of scope for the new tackle (to be described presently) which I first brought to the notice of pike-fishers through the columns of the *Field* (1861–2), and afterwards in the form of a pamphlet.[1]

As regards spinning-flights, the great object to be attained was clearly the getting rid, once for all, of the large number of superfluous hooks and triangles—the latter ranging from three to five—commonly employed on a good sized flight.

In discussing the old objections and the remedies which I proposed for their removal, I cannot, perhaps, put the arguments better than I stated them in the little brochure above referred to.

'The great number of fish that escape with the ordinary tackle after being once struck is undoubtedly one of the most forcible objections which has been hitherto urged against spinning. The average of such losses has been computed at from fifty to sixty per cent., and that estimate is under rather

[1] *How to Spin for Pike.* Harrison and Sons, London.

than over the mark, as will be discovered by anyone who takes the trouble of keeping a register of his sport.

'This undesirable result is mainly attributable to the large number of hooks and triangles—the latter varying from three to five—commonly employed on a good-sized flight. These, I unhesitatingly assert, are not only useless, but distinctly mischievous, both as regards the spinning of the bait and the basketing of the fish when hooked. Upon the bait they act by impairing its brilliancy and attractiveness, rendering it flabby and inelastic; and when a transposition of the hooks becomes necessary, by generally destroying it altogether. Upon the pike they operate only as fulcrums by which he is enabled to work out the hold of such hooks as were already fast.

'The great size and thickness also of the hooks used contribute materially to the losses complained of, as it should always be recollected that to strike a No. 1 hook fairly into a fish's mouth requires at least three times the force that is required to strike in a No. 5; and that this is still more emphatically the case when the hooks are whipped in triangles. For example:—let us suppose that a jack has taken a spinning-bait dressed with a flight of three or four of these large triangles, and a sprinkling of single hooks—say twelve in all. The bait lies between his jaws grasped crosswise. Now it is probable that the points of at least six of these hooks will be pressed by the fish's mouth, whilst the bait also, to which they are firmly attached, is held fast between his teeth. It follows, therefore, that the whole of this combined resistance must be overcome, and that at one stroke, and sharply—before a single point can be buried above the barb!

'The grand principle in the construction of all spinning-tackle is the use of the *flying triangle* as distinguished from that whipped upon the *central link*. A flight constructed with flying triangles can never fail to be tolerably certain in at least *landing* a fish once struck. There are, however, many degrees of excellence in such flights, even in the item of 'landing,' and as regards the 'spinning' of the bait, not one in a hundred of

those that have come under my notice has been in the least calculated to make a bait spin with the regularity and rapidity requisite.'

In order to ascertain, therefore, the best possible combination of hooks, &c., for this purpose, I have been for many years experimenting upon every part of the spinning-flight and trace; including the number, shape, size, and arrangement of the hooks, leads and swivels, with the various materials out of which a trace can be composed. The object having been to arrive as nearly as possible at a perfect spinning-trace. The results of these further experiments, whilst suggesting various modifications in the detail of spinning-tackle, have fully borne out the correctness of the principles originally advanced.

Confining myself, then, for the present to the question of the flight—that is, the hook portion of the spinning-trace—and, having regard to the arguments already urged, the principle which I am convinced should rule paramount in the construction of all such flights is the substituting of flying triangles (*i.e.*, triangles kept loose from the bait by short links of their own), for triangles, or any other hooks, whipped on to the *central link*—and even of flying triangles using as few as possible.

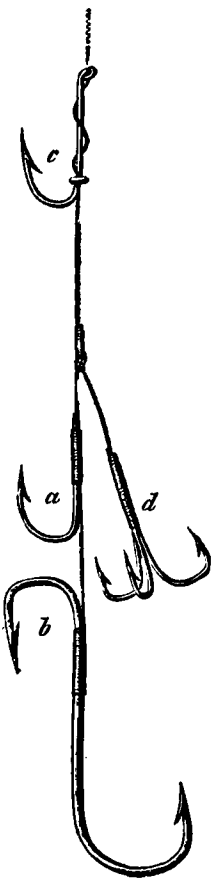
Three flights—the ultimate outcome of my experiments—suited to different sized baits, and showing the position of the hooks and flying triangles which experience has led me to adopt as improvements upon my older patterns, are figured in the following pages.

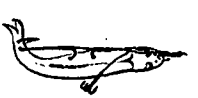
No. 1 flight is for small-sized gudgeon, dace, or bleak, $4\frac{1}{2}$ in. to 5 in. long. Suited to very fine pike-spinning, or spinning for Thames trout.

No. 2, a flight for a largish gudgeon or a small dace, $5\frac{1}{2}$ in. to 6 in. long.

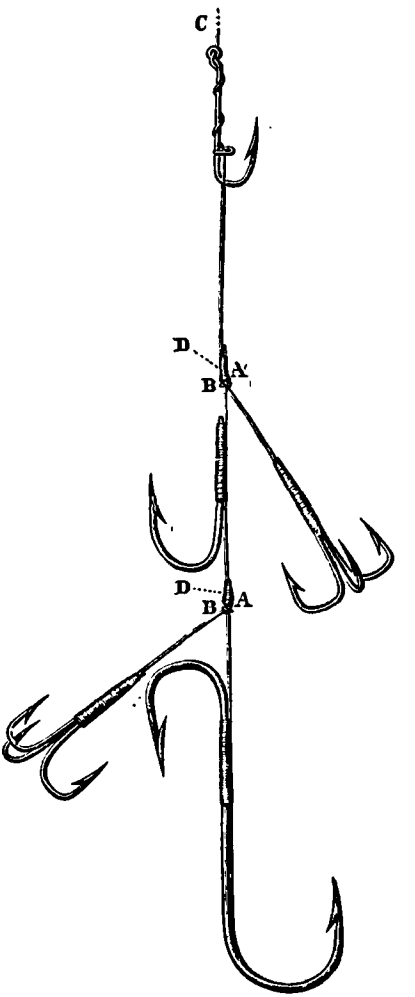
No. 3, for a medium sized dace, $6\frac{3}{4}$ in. to $7\frac{1}{4}$ in. long.

The diagrams in miniature below each flight of hooks show their position when baited. On comparing these flights with those figured in my previous books it will be seen that, whilst adhering in every way to the principles originally advocated,





SPINNING-FLIGHT NO. 1.





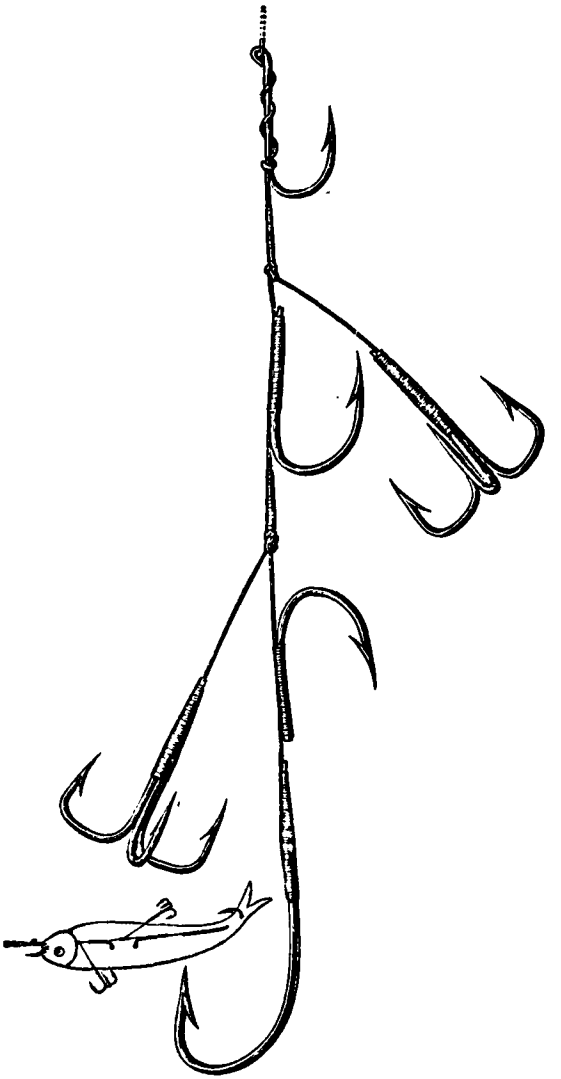
SPINNING-FLIGHT NO. 2.

and from which, indeed, I have seen no reason whatever to depart, I have modified in some respects the detailed arrangements of the flights—first, by the substitution of a second holding or body-hook marked *a*, flight 1, between the reverse-hook, *b*, and the lip-hook, *c*, and, secondly, by returning to my original plan of two smaller flying triangles (except for the very smallest sized flights) instead of one larger triangle.

Not second thoughts are best, but third, which are the better first.

An important variation—again not of a principle, but rather of the mode of applying it—is the Tail-hook in combination with a *straight* instead of a *hooked* Reverse, as represented at page 76. Although I have been trying for many years to hit upon a mechanical means of arriving at greater perfection in this important item, the plan now presented to the reader occurred to me only when in the act of revising these pages for press, during a recent fishing visit to Medmenham Abbey, and after the engravings of the spinning-flights, with my original 'curved' or hook-reverse, had been already made. From the perfection of its working in practice, however, I have no hesitation in believing that this new plan of accomplishing the absolute 'fixation' of the tail-hook in spinning-flights, by a straight 'reverse,' passing from one side of the bait right through to the other, is destined to *entirely supersede both my own hook-reverse—now in very general use—and all other known systems of tail-hooks whatsoever.* It makes the bait spin with a brilliancy that even my professional Thames fisherman—and Thames fishermen are critical judges on the point—declared he had never seen equalled; by its immovability when once inserted, it makes the bait last very much longer than even the best of the old systems; and lastly, it is both more easily adjusted, and—in the smaller sizes of flights, at any rate—enables the extra 'body-hook,' between the tail-hook and lip-hook, to be conveniently dispensed with.

It is important, in order to make the flying triangles stand



SPINNING-FLIGHT NO. 3.

well out from the central link in the way shown in the engraving, that they should be attached—knotted on to it—in a particular manner. The method of attaching them is as follows: first, tie a half-knot (*a a* in flight No. 2), in the gut or gimp to which the triangle is whipped, at the point where it is intended to diverge from the bait, *b b*. Take the triangle in the left hand and the end of the central link (*c*) in the right; pass the point of the latter through the half-knot in the direction of the triangle; pull the triangle down to its place; draw the knot tight; and lap over the further end as figured in the woodcut at *d d*. By this means the inclination of the flying triangles will always be to stand away from, instead of to lie close to, the central link.

The advantage of the additional body-hook (between the reverse-hook and lip-hook), is that—in the case of flights with the curved reverse-hook—it counteracts the pull or tension from the lip-hook, which has a tendency to overpower, so far as the small reverse-hook is concerned, the pull or tension exerted to keep it in its place by the curve of the tail. This pull from the lip-hook I found had the effect of not unfrequently causing the small reverse-hook to work out of its hold, and to counteract this inconvenience the additional body-hook, pointing towards the bait's head, has been added. There is, therefore, a 'double counteraction' between the two sets of hooks; the reverse tail-hook counteracts and keeps in position the principal tail-hook, and the reverse body-hook acts as a resister to the strain from the lip-hook.

No. 2 will be found the most commonly useful size of flight, as, although it is more particularly adapted to gudgeon or dace of the length given, it will answer very fairly well for a bait half an inch longer or shorter, and this latitude will take in a very considerable portion of the ordinary sized spinning-baits. In fact, I do not believe, except under exceptional circumstances, in spinning with very much larger baits or flights than those indicated.

The moment you come to a large heavy bait, such as a

seven-inch dace—suitable for flight No. 3—it is exceedingly difficult, unless you have an enormously stiff and heavy rod—which to my mind takes away half the pleasure of spinning—to strike with sufficient force to overcome the resistance offered by so large a bait held tightly across the pike's jaws.

On the whole, though I do not deny that there may be exceptional waters in which large baits are used with advantage, for my own taste I rarely spin with a flight larger than a No. 2, and as a rule never with one larger than No. 3.

The question of the relative sizes and proportion of the hooks and flight to the bait is a vitally important one, both in arriving at a brilliant spin, and in hooking and basketing the fish struck, and I would suggest to every spinner to carry certainly the two smaller of these sizes in his trolling-case, and, if there is any chance of heavy baits being employed, No. 3 also. A very good-sized flight might also be made somewhere between Nos. 2 and 3. Any fishing-tackle maker ought to be able to make this tackle with absolute accuracy by simply dressing from the diagrams, and there ought to be no difficulty in their doing so if the customer will only himself insist upon the flights being exactly reproduced.[1]

This observation applies not only to the material of which the spinning-flight should be made, and to the size, proportion, and position of and between the hooks, but also in a primary and all-important degree to the shape of the hooks themselves. The difference in killing power between a triangle of Limerick hooks, for example, and one of my pattern, shown in the engraving, is not less than 100 per cent. against the former; the Round and Kendal bends standing about midway between the two. Here again, if hookmakers would only consent to be taught by practical fishermen, instead of flooding the markets year after year with obsolete and worthless patterns, there ought to be no difficulty in giving the exact bend of hook, length of shank, &c., as figured in the woodcut (fig. 1).

[1] I have supplied patterns of these flights and my other pike-tackle to Mr. Charles Farlow, 191 Strand.

One would have supposed that for the sake of the advance of their own business they would be on the *qui vive* to adopt and carry out any real and obvious improvement in hook-making, but the reverse appears to be the case. The experiments which I have published with regard to the penetrating—that is the killing—power of different bends of hooks, have clearly established that there is a vast difference between hooks, depending, first, on their bend, secondly, their barb, and thirdly, their length of shank. But though I have demonstrated the importance of this over and over again, and have shown in theory and practice what should be the construc-

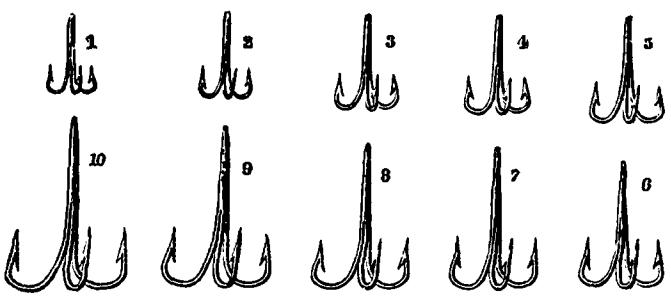


FIG. I.—TRIANGLES FOR SPINNING-FLIGHTS.

tion of a mechanically perfect hook, not only do the hook-makers continue to make triangles combining all the vices which, when once pointed out, are 'obvious to the meanest comprehension,' but, what is more annoying to me personally, they issue triangles—and, indeed, a number were exhibited as being my pattern at the late Fisheries Exhibition—which are in reality as unlike my patterns in every important particular as can well be imagined: my triangles have a longish shank, which is necessary to give them penetrating and holding power—the triangles exhibited as mine almost invariably have a short shank; the pointed portion of my hook is slightly turned in, at an acute angle, that is, towards the shank of the hook, a necessary condition for really first-rate penetration—hookmakers, on the contrary, turn the

pointed part of the hook at something more than a right angle away from the shank; the barbs themselves of my hooks are long and finely-pointed, *straight-tipped*, and as regards the outside line exactly level with the rest of the hook—the hook-makers persist, in spite of all I can say, in making the barbs short, hollowed out on the inside, and turned outwards on the outside.

Whatever applies to a single hook applies, *à fortiori*, to a triangle; indeed, there being three hooks in the one case, and only one in the other, it may be fairly said that the argument acquires a threefold force. My experience of hook-makers and their idiosyncracies, being what I have described, I have as a precautionary measure furnished Messrs. Harrison, Bartleet and Co., of Redditch, with correct models of my hooks from which to work.

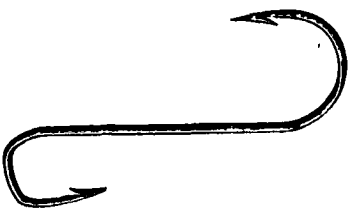
Triangles are now brazed, that is, soldered, together—a great improvement on the old-fashioned system of lapping them together with silk. From No. 5 to No. 10 are the sizes I generally find the most convenient for dressing pike spinning-flights.

TAIL HOOKS.

It will be noticed that in the foregoing diagrams of flights the large tail-hook and small reverse-hook are made in a single piece. When my attention was first directed to the subject of spinning-tackle, I found that one of the chief drawbacks of the old-fashioned flights was the working out of the fixed hooks owing to the strain of the curved bait's tail. The fixed hooks were, of course, set in the usual way, pointing towards the head. In order to remedy this and other minor defects, I substituted for the small single tail-hook a long-shanked round-bend hook, with a smaller reverse-hook made in a single piece (*vide* cut), which, at any rate, fulfilled its object better than any other plan then made public, and in this form they have been very generally adopted by spinners, and may be purchased of various

sizes,—as also the 'straight reverse,' which is destined to supersede them.

CURVED REVERSE.



STRAIGHT REVERSE.



FIG. 2.—'CURVED' AND 'STRAIGHT' TAIL AND REVERSE-HOOKS.

LIP-HOOKS.

The proper position of the bait when attached to the flight depends mainly upon the nice adjustment of the 'lip-hook.' If it is either drawn too close or not close enough the bait's body will, in the first case, be bent in a curve forward, and in the second case in a curve backwards, a sort of cross between the Roman fall and the Grecian bend, and either fatal to spinning. The old-fashioned 'lip-hook,' figured in the margin of next page had to be in every case completed by the troller himself, or whoever dressed the flight. The 'loops,' the part of Hamlet in a 'lip-hook,' were, in fact, omitted altogether, and had to be improvised of gut, gimp, or wire. This hook was found to be

lacking in various points, notably in the essential of durability, and accordingly several plans were tried to remedy the deficiency by making the 'lip-hooks' entirely of steel, one or both loops being brazed on to the shank. The difficulty with these latter inventions was that owing to the slipperiness of the polished steel the trace could not be twisted tight enough round to prevent it shifting its position on the slightest strain. It was a *slip* hook instead of a *lip* hook.



FIG. 3.—OLD-FASHIONED LIP-HOOK.

There were other difficulties not worth enumerating, but metal lip-hooks are now made from a pattern that I supplied to Mr. Farlow some years ago, in which, by leaving the shank of the hook rough, instead of smooth, the slipping of the trace is avoided, and by some slight changes in the position of the steel loops the trace stands in a straight line with the shank of the hook, instead of, as in the obsolete patterns, nearly at right angles with it.

The only four sizes of 'lip-hooks' which any spinners need keep by them are figured in the diagram.

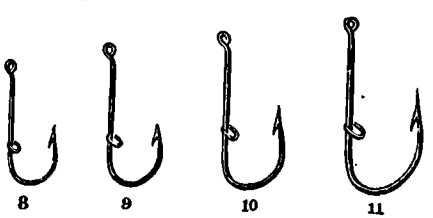


FIG. 4.—LIP-HOOKS. NEW PATTERN.

It is better to use the smallest size that will hold the bait, as 'lip-hooks' comparatively seldom hook a fish, and show, of course, more than any others on the flight.

There is a 'dodge' connected with the twisting of the trace round the shank of the lip-hook which, though apparently trifling, is really almost indispensable in the proper working and adjustment of the flight. As shown in the diagrams, p. 70, the

trace is passed two or three times round the lip-hook with the object of course of keeping it fixed in its position ; if it slipped from such position either upwards or downwards, the spinning of the bait would be instantly destroyed. But it often happens that as the trace gets softer or more slippery from wear it is necessary, in order to keep it from slipping, to increase the number of turns round the lip-hook, and the point is how to do this without first pulling one end of the trace through the loop of the lip-hook, which would necessitate cutting or unlapping the loop of the former. I will try and explain, although it is very difficult to do so verbally, how this trouble may be avoided and the additional turns given without pulling the trace through the eye of the lip-hook :—Detach the trace from the running line—if possible from below the lead—then take the lip-hook *by the bend* firmly between the finger and thumb of the left hand, push a little of the trace downwards through the eye or top loop with the right hand, then pull out from below two or three inches ; next take hold of the trace close to the part which is already twisted, and give it an extra twist round the shank. Hold the fresh twist in its place by the pressure of the first finger of the left hand and taking the extreme end of the trace between the finger and thumb of the right hand pass it from below through the remaining loop left by the originally pulled-in couple of inches of the trace ; now pull the trace tight with the right hand, and it will be found that another turn or twist has been added round the shank. In order to reduce the number of turns reverse the latter part of the process. It is very difficult to convey this sort of information verbally, but I think with a careful reading of the above instructions and some little patience the difficulty should be mastered.

In taking leave of the subject of spinning-flights and traces I will add a suggestion which may not be found without practical utility : with the exception of the 'lip-hook,' I generally cover the lappings of all hooks used in spinning-tackle with silver or gold tinsel,' which, perhaps, somewhat increases the attractive effect of the bait, and certainly makes the tackle last

much longer. For the largest sized flights to be used with whole eels or other very large bait a varnish made of powdered red sealing-wax and spirit of wine may be used over the lappings to impart a sort of *haut goût.*

TO BAIT A SPINNING-FLIGHT.

Lay the bait in the palm of the left hand, and, taking the tail-hook by the upper or reverse part, pass the point of the round end into the side of the bait about half an inch from the origin of the tail fin, pressing the point *through* the end of the fleshy part of the tail and again upwards as near the base of the tail fin as practicable. Then insert the small reverse-hook —or (as the case may be) the 'straight-reverse,' the barb driven quite through the bait—so as to curve the tail nearly, but not quite, to a right angle, and fix the shoulder-hook in its position.

Lastly, having adjusted the 'lip-hook' exactly to the length of the bait, pass it through both its lips, always putting it through the upper lip first when the bait is a gudgeon, and through the lower one first with all other baits. This will be found important in securing a really brilliant spin.

The flying triangle should not be *hooked into the bait in any way*, but be allowed to hang free in the actual position in which it usually appears on the flight. The upper and 'shoulder portion' of the body of the bait should hang perfectly straight when attached to the flight, for which purpose the nice adjustment of the 'lip-hook' already adverted to is needful.

When the bait is a small dace or gudgeon, or a bleak, do not be satisfied with a wobble or anything less than a really brilliant spin, which can always be obtained if the above directions are attended to, or by some slight shifting of the hooks as at first fixed in the bait.

In a former essay I have given some statistics as to the actual results obtained with the flight described, as contrasted

with those obtained from flights of the antiquated patterns. I find it is there stated that 'whilst with the best of the latter flights the average of fish lost after being hooked was about half; with the former the proportion has been only one in six, or about sixteen per cent., thus giving a clear gain to the basket of four out of every twelve hooked. This immense disparity, however, will appear less surprising when the conditions before explained are borne in mind. The following is a register of the number of runs and the number of pike lost with this tackle when fishing on the Hampshire Avon during four consecutive days.

	No. Caught.	No. Lost.	
August 8	11	2	
,, 10	6	1	The five largest fish weighing together 56 lbs.
,, 11	9	0	
,, 13	6	1	
	32	4	

Total lost after being hooked = 1 in 8, or about 13 per cent.

Mr. Frank Buckland, who was fishing at the same time, and who used my tackle, did not miss a single run.

When this flight was first made public I received a great number of letters from sportsmen congratulating me on the invention and testifying to the success with which they had used the flight. In the sporting press also, and in nearly all angling books and tackle catalogues which have been published for the last ten years, this flight will be found figured and referred to in encomiastic terms. The following letter, which I happened to come across in the *Fishing Gazette*, I quote, because the writer, whom I have not the pleasure of knowing, gives statistics of losses as well as of runs which not only substantiate, but very greatly exceed those given above.

'Has your correspondent, the "Bostorn Bittern," in his search for an efficient flight for spinning the natural bait, never heard of or seen the "Pennell" flight? If not, let me advise him to give it a trial next season, as I am confident, after trying

various others, that there are none to approach it. I have used it now for three seasons, and as to missing 50 per cent. of fish, as he complains of, I will engage that if mounted and used in the manner recommended by its inventor (and it can be so procured at several of the London tackle-makers) he will not miss 10 per cent. of the fish with it. It is as superior to the old-fashioned three-triangle flight as sunshine to a rush-light. It gives a most brilliant spin, and I have taken fish with it when all other methods have failed. I get mine from Mr. A. Young, of Oxford Street, and find them well and properly made by him.—I am, &c., 'ROTANS.[1]

'Bury St. Edmunds.'

Before dismissing the subject of spinning-hooks—triangles, lip-hooks, &c.—I must take this opportunity of bringing to the notice of the spinner a new method of attaching the flight by which greater fineness, simplicity, and durability, so far as the bait is concerned, are attained.

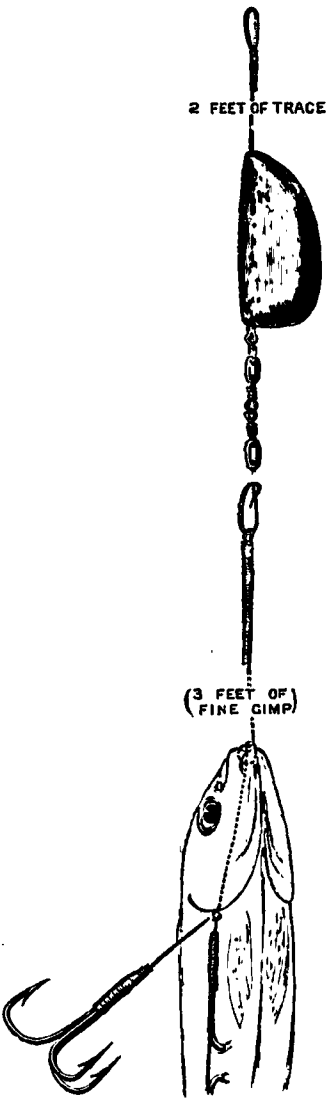
This method, which I have now been using myself for some years, consists in dispensing entirely with the lip-hook and substituting for it a half-knot tied in the trace through the lips of the bait, as recommended also in the fastening for the dead gorge bait. The flight—which should be in every respect the same as the flights already figured, Nos. 1, 2 and 3, *minus* the lip-hook—having been adjusted to the bait as far as the body-hook, the trace (detached, of course, from the hook-swivel below the lead) is passed under the gill cover and out through the bait's mouth, being then passed through both lips and again under itself, thus forming a sort of half knot which never can slip and has the merit of keeping the bait's mouth closely shut.

It is also needless to point out to any experienced spinner the great gain on the score of 'fineness' which must arise from being able to dispense entirely with the lip-hook. The lip-hook shows more than any other hook on the flight and

[1] *Fishing Gazette*, April 12, 1884.

catches less—less fish I mean, for in weed-catching its success is remarkable. In addition, however, to getting rid of this unsightly appendage the new method secures the further advantage of adding very considerably to the durability of the bait, in fact, I don't think I should be exaggerating if I said that a bait attached in the manner above described would last half as long again as a bait attached with the ordinary lip-hook.

On the score of simplicity, provided the trace be made in the manner described, with a hook-swivel of my pattern below the lead, no objection can possibly be urged. The loop of the trace, whether gut or gimp, being lapped *close up to the end* (*vide* cut), will be found stiff enough to pass through the nose and under-lip of the bait, if a puncture be previously made above and below with the point of the tail-hook. This obviates entirely the necessity of a baiting-needle. The loop should in every case be passed through the upper lip—or rather nose—of the bait first, and the under lip second; as a neater knot is thus formed and the bait appears both to last longer and spin better. The 'straight-



FLIGHT NO. 4, DISPENSING WITH LIP-HOOK.

reverse' hook is recommended; and—at any rate for the smaller-sized flights—the extra 'body-hook' can then be dispensed with. A gudgeon baited in this way with one of my flights, the lip-hook being removed, is shown in the engraving.

The loop of the trace lapped up close to the end is here indicated, as well as a portion of the trace, with the lead and hook-swivel.

MATERIAL FOR DRESSING FLIGHTS.

There would be nothing, of course, so 'fine,' nor, it may be added, so excellent as a medium for tying spinning-flights and traces as single salmon-gut, if only it were not liable to be cut by the pike's teeth,—the probability of such an accident being increased in proportion to the size of the pike. I have often, however, used single gut in very bright water and where extreme fineness of fishing was essential to sport, taking my chance of being cut. I have also used the twisted gut, and this makes a very enduring and serviceable flight though, of course, far from being as fine as single gut. On the whole, ordinary gimp, fine rather than stout, and stained as directed, or varnished with Brunswick black, will probably be found by the majority of spinners the most satisfactory medium, at any rate for the flight itself.

When I dress my own flights on gimp I very commonly make an exception of the flying triangle, which it is desirable should stand out with a certain amount of crispness or elasticity (N.B. not rigidity) hardly to be obtained by silk gimp. I dress this triangle on twisted (sometimes single) gut, knotting it as well as lapping it round the central strand in the manner shown in the flights already figured.

The idea struck me a few months ago, when in a cobbler's shop, that the hog's bristles which are used in shoemaking would form an admirable material on which to dress the flying triangles, as they are so much thicker and apparently tougher than salmon-gut. Having procured a good supply of the bristles, which I was

allowed to pick out myself at a trifling extra cost, I dressed a flight of hooks in this manner, and I cannot but think that the picked hog's bristle makes a very perfect flying-triangle so far as elasticity is concerned, whilst I should doubt its being 'cutable' by the teeth of a pike unless of very exceptional dimensions.

THE TRACE.

Travelling upwards from the hooks the next point we come to is the trace. Upon this, the intermediate link between the bait and the reel-line, depends only in a secondary degree the neatness and efficiency of spinning-tackle, and the first point to decide is of what material the trace should be. Any sort of wire, gut, or gimp, which is not too clumsy, will answer the purpose to a certain extent, but the point to be aimed at is to secure the utmost possible amount of fineness combined with the requisite strength, and here I may be, perhaps, allowed to quote a few remarks from my pamphlet, 'How to Spin for Pike.'

'It has become a habit with many fishermen to consider the pike as a species of fresh-water shark, for whose voracious appetite the coarsest bill of fare and the most primitive cookery only are required. *To a certain extent* this view is founded on fact. There are few morsels so indigestible that, if they come in his way, a really hungry pike will not make an effort, at least, to bolt. I have known one to be taken with a moorhen stuck in his throat, the feet protruding from his mouth, and bidding fair to have choked him in a few minutes, had not destiny, in the shape of a landing-net, reserved him for a more aristocratic fate. In the Avon three pike were not long ago found on a trimmer, one inside the other; whilst it is well known that watches, spoons, rings, and even, it is stated, the hand and fingers of a man have been taken out of this fish's maw.

'But the fallacy of the opinion, or rather of the theory based upon it, lies in the assumption that because a hungry pike will take this or that, a pike that is not hungry will do the

same. Nothing can be a greater absurdity. A pike is regularly on the feed at certain hours only during the twenty-four ; and when partially gorged, or not very hungry, his appetite is dainty and requires to be tickled. At these times a man who "fishes fine" will take plenty of fish, whilst one who uses coarse tackle will as certainly take few or none at all ; and this observation is equally applicable to every description of tackle.'

Now, as I have before said, the finest material that can be used is the best picked salmon-gut, which, when knotted in the way I shall presently describe, is strong enough to hold anything. There should be at least three feet of gut between the bait and the lead, and as much between the lead and the running-line. Or the trace may be made with single gut below the lead and twisted or double gut above it.

The way to twist gut for this purpose is to take an ordinary gut casting-line of, say, three yards long, knotted with a *single* fisherman's knot. Soak the line in tepid water ; when it is soaked double it in the middle, but so that the knots shall not exactly coincide. Attach the line, at the point where it is bent in the middle, to a hook or anything that will hold it firmly. Then with the finger and thumb of the right hand twist the two lines together slowly and evenly, separating the two sides of gut somewhat in the form of a V. They are rolled, as it were, between the finger and thumb both at the same time, always keeping the V separation mentioned. It will then be found that the two separate strands will twist together of their own accord, and will always afterwards retain the twist. The left hand, and sometimes the right for a change, will be required during the operation [a rather fatiguing one for the finger and thumb] to keep separating the two loose ends of gut, which have an instinct to come together and crinkle up on their own account.

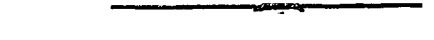
If it is desired to make the twisted line tapered, two separate tapered pieces of gut must be used and twisted together, beginning at the two thick ends and ending at the two finer ones. This process is equally applicable to salmon-lines, and is much neater than the separate strands of twisted gut knotted clumsily

together as generally supplied by the tackle shops. The gut used should always be carefully stained in the first instance of the shade desired.

NEW KNOT FOR SALMON-GUT.

The way to tie the knot before referred to is as follows :—Having thoroughly soaked the gut in tepid water, begin by tying the two strands in what is known as the ordinary fisherman's knot,—that is two half-hitches, *a*, *a*, each *separate* half-hitch being completed. The difference between my knot and the ordinary fisherman's knot is that having drawn each separate half of the knot thoroughly tight I do not draw the two together, but only draw them to within the space of about one eighth of an inch, marked *b* in the diagram, of each other. I then lap between these two knots either with white waxed silk or very fine soaked gut, and cut off the ends tolerably close. (See vol. i.)

The between-lapping relieves the knot itself of half its duty, and on any sudden jerk acts as a sort of buffer to receive and



THE 'BUFFER KNOT' FOR SALMON-GUT.

distribute the strain. This knot, moreover, is one of the simplest possible forms that can be tied, and from its being much neater and nearly twice as strong, may be substituted with advantage for the ordinary fastening in all salmon casting-lines. As commonly tied, I find that stout salmon-line will break—at the knot—on a steady strain of twelve or fifteen pounds ; tied as suggested it will break at any other place in preference, no matter how great the strain may be.

The *Fishing Gazette*, in an editorial notice of the Buffer knot says, 'The Buffer knot, invented by Mr. Cholmondeley-Pennell, is double the strength of the ordinary knot, as we have frequently proved by experiment. . . . We would suggest that spinning-traces for pike and trout made on the same plan would be appreciated.'

I tried formerly a long series of experiments with wire, both single and twisted, of different sorts. Although very strong and fine, however, none of my experiments were sufficiently encouraging to lead me to adopt wire as a permanent substitute for gut or gimp. The difficulty was always that with certain particular sharp turns or hitches, the wire, whether single or twisted, was apt to break, and generally was much less easy to manipulate. Mr. Charles Farlow has lately, however, brought out some twisted copper-wire specially intended for extra strong traces for pike, or mahseer fishing. This wire is annealed by some special process which makes it as tough and impossible to break under any complication of twisting as gimp itself. Indeed, its strength is enormously in excess of that of gimp, and it is admirably stained of a dark neutral tint. Although I have not had the opportunity of putting this invention to the only real test—practice, I can feel no doubt whatever that it would certainly form an admirable substitute for gut or gimp in the portion of the trace above the lead, and very likely for that below the lead also, though on this point I express no decided opinion. The twisted wire is so exceedingly strong and tough that there can be no advantage in using any but the finest sizes, which would probably be at least equal in strength to the running line itself. The next point is

THE SWIVELS,

which should be double, and having for convenience of shifting baits, &c., one of the hook-swivels figured at page 28. These two swivels will be found all that are ever required upon the spinning-trace. Immediately above the swivels comes

THE LEAD,

and this brings us to the question of the second great drawback of spinning, namely, 'kinking,' and its cure.

Vexatious as must, doubtless, be the loss of a fish owing to the faulty construction of the flight, for sheer downright aggravation and 'cussedness' there is nothing equal to the 'kinking'

or crinkling up of the line, which no care in the selection of the swivels or the preparation of the tackle can always avert.

'In ninety-nine cases out of a hundred "kinking" is the result of insufficient *vis inertiæ* in the leads to make the swivels act. The lead was always attached to the trace by the *trace passing through a hole in the centre of the lead*, and, in consequence, it was impossible it could offer any resistance worth mentioning to the rotatory motion of the bait, the effects of which—that is the twisting—instead of being confined to the yard or so of gut or gimp below the lead, naturally extended to the upper part of the trace and running-line, and produced "kinking."

'"Kinking" is only another word for twisting; get rid of twisting and "kinking" at once becomes impossible. The nature of the disease being thus diagnosed, the cure became easy:—The lead, instead of being evenly balanced *on* the line, should be attached with its principal bulk or weight hanging horizontally *beneath* it. By changing the position of the centre of gravity the resisting power or *vis inertiæ* of the lead is, for the purpose in question, more than quadrupled without any increase in the actual weight, and the proper action of the swivels is ensured.'

Since I first brought this plan to the notice of the public in the columns of the *Field* some twenty years ago, dozens of spinning-leads have been invented—all imitations or modifications of this system. I have myself made many experimental varieties, some of which have appeared from time to time as new editions of my books on fishing have been called for; the object being to arrive at perfection in the form of the lead.

The first point to be overcome in the original lead was its tendency to hang or catch in the weeds, which gave some irreverent critics an opportunity for aspersing it as 'Mr. Pennell's weed-catcher.' This criticism, however, even if not kindly meant, had a salutary effect in stimulating the inventive powers of myself and others. We soon had the '*Field* lead,' followed by half a score of others, the names of which I forget. But I remember that none of them hit upon, what I will apo-

logise for calling, the complete idea,—a 'solid half-sugar-loaf shaped lead,' threaded upon the trace horizontally, and having the apex upwards. This idea, apparently by a sort of law of natural justice, was reserved for the original inventor, and, I believe, the latest outcome (*vide* diagram) will be found 'not easy to beat.'

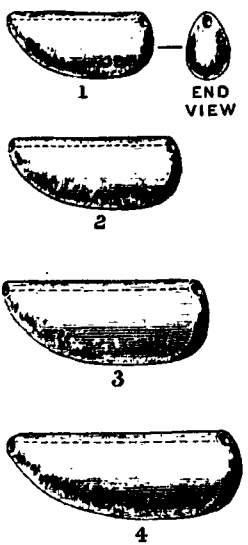


FIG. 1.—LEADS FOR SPINNING-TRACES.

The rounded end, it should be well understood, hangs lowest down or nearest the bait. This lead will not only be found an absolute cure for kinking, but also gives the necessary 'ballast' for the trace in the most condensed form—weight for bulk—and, therefore, in the form least conspicuous.

The lead should be attached to the trace in the form shown in the engraving, page 83, of this volume, in which the position of the swivels below the lead will also be seen.

The trace should, of course, fit closely into the lead hole, in order to prevent the line twisting through it; but the natural thickening produced by doubling the trace at the point of junction with the swivel will, with the lapping, afford the necessary thickening of the plug. The four sizes of leads shown in the diagram will be found, as a rule, all that are required; from the lightest (No. 1), suited for very fine or 'shallow' fishing, to the heaviest (No. 4), which is a convenient size for very large baits or spinning in deep water. The weights of these leads are as follows:

No. 1 . . ¼ oz.	No. 3 . . ½ oz. very full.
No. 2 . . ½ oz. bare.	No. 4 . . ¾ oz. full.

If it is desired temporarily to increase the weight of the

trace, this can be done with perfect ease, and without any interference with the action of the legitimate lead and swivels, by twisting some 'lead-wire' round the trace a foot or so above the lead, or, if no lead-wire is at hand, by adding a second lead *above* the junction between the running line and the trace.



FIG. 2.—LEAD-WIRE ADDED TO INCREASE WEIGHT.

It is now some years since I have had the pleasure of seeing my principle of spinning lead adopted by the large majority of trollers, and its efficacy as a cure for 'kinking' generally admitted. I guarantee that with the lead and trace of the form shown at p. 83, and the flight of the proper size for the bait —the latter may be trailed (the severest test) from Teddington to Oxford, without a single 'kink' taking place above the leads. After this 'tall' blast upon my own trumpet, I may, perhaps, be pardoned for quoting a few extracts from letters by well-known sportsmen, and a few 'opinions' of the sporting press in substantiation of what has been said.

MR. PENNELL'S SPINNING-TACKLE.

Sir,—As I observe that a discussion has lately appeared in your columns between Mr. Cholmondeley-Pennell, the apostle of fine fishing, and the advocates of the *status quo*, I beg to bear my testimony to the success of the former gentleman's theories, so far as I have had an opportunity of testing them. During the last fortnight I have been using a set of the spinning-tackle recommended by Mr. Pennell, and nothing could be more admirable than its working; 'kinking,' an old enemy of mine, did not once make its appearance, and of the six fish run on the last day, not one failed to find its way safely to the bag.—ONE WHO IS NOT TOO OLD TO LEARN. *Field*, Nov. 30, 1861.

Sir,—Allow me to add my testimony to that of your correspondent, 'One who is Not Too Old to Learn,' as to the merits of the spinning-tackle explained in your columns by Mr. Pennell, the 'apostle of fine fishing.' I dressed a trace, flight, &c., according to his plan, and I must say that I never had better sport (for the

water) than since I have used it. I lost comparatively few fish, and besides basketed several perch, which I had not previously done over the same ground, probably owing to the coarser tackle then employed. The greatest boon, however, for which spinners are indebted to Mr. Pennell, is the complete cure of 'kinking,' accomplished by his mode of fastening the lead.—JACK KETCH. *Field*, Dec. 7, 1861.

A friend of mine, Colonel Villiers, is in raptures with the killing tendencies of your pike tackle, and tells me he has discarded all others. From my limited experience, I fully endorse his opinion; it is deadly indeed, proving fatal in about five times out of six, or perhaps rather more.—From W. PEARD, Author of 'A Year of Liberty,' 'Fish-farming,' &c.

The remedy proposed to obviate kinking, pleases me very much, the said kinking having been invariably my bugbear. I have discarded line after line all to no purpose, but I feel satisfied that you have found a remedy for this hitherto *bête noire* of anglers. The perusal of the 'Book of the Pike,' has completely revolutionised my faith in my own tackle.—RICHARD B. AUSTIN.

I gave this tackle a severe trial a short time since; I tried it with a bleak. Now a bleak is always a difficult bait to make spin well, it is very apt indeed to get out of spinning, and is so soft, that the slightest touch dislodges the hooks and throws it out, so that it often will not spin properly; and this reluctance with the aggravation natural in spinning-baits, somehow always occurs just at the very moment when you want your bait to spin its best. The bleak I had, too, came from a spot where some hot water is discharged, and this always makes them much softer than their fellows. Added to this they were in spawning condition, and in even a worse state still than ordinary. *Nevertheless in spite of all these adverse circumstances, I spun a bleak with Mr. Pennell's tackle for more than two hours.* I was fishing long cast and two or three times it fouled the bottom and took hold of twigs and rubbish, yet it never once got out of spinning for an instant, but spun on to the last as well as it did when I put it on. With the ordinary three-triangle tackle, the bait would have been out of spinning and the centre triangle loose, in ten minutes, and in ten minutes more the bait would have been useless.—ANGLING EDITOR. *Field*, May 17, 1862.

Mr. Pennell's plan of hanging the lead is glorious for pike fishing.—H. B. *Field*, May 24, 1862.

TRENT.—Mr. Pennell's new and improved style of fixing the lead on a spinning-trace to prevent the line from twisting, will prove the best thing that ever happened to pike fishers who fish from a reel. He is quite right, it is a perfect cure for all kinking. The gentlemen whom I have supplied with the tackle are much pleased with it, and tell their friends it is the best idea ever invented —and I think so too. I have frequently been perfectly stuck fast from the line twisting, and have been obliged to take it all off the reel and draw it behind me through a field before I could start again; but, thanks to Mr. Pennell, that sort of work is now all over.—WM. BAILY, Nottingham. *Field*, Nov. 6, 1862.

From the Field.

Spinning for pike is an accomplishment so very widely practised by modern anglers, and the means hitherto adopted are, from a variety of circumstances, so unsatisfactory, that we are glad to welcome any attempt to improve the apparatus in general use, or to render those sudden partings between individuals connected by the fine line or strong gimp sympathy, which are so distressing to one of the parties concerned, less common than they unfortunately are. It is notorious among spinners for pike that no tackle has ever yet been invented from which a very large proportion of fish hooked do not manage by some inscrutable means to effect their escape. We have ourselves noticed this fact, and many of Mr. Pennell's views upon this head, as well as others connected with the art, certainly meet our warm approbation. His remarks regarding *kinking*, for example, are excellent, and the means he takes to avoid it are apparently all that is needed. His plan of employing flying triangles is, to us, original. . . .

For the purpose of avoiding conspicuousness, I recommend that all pike leads should be bronzed with a coating of Brunswick black. If this cannot be obtained, common tackle varnish will be better than nothing. This can be altered to a dark green tint if desired, by the addition of a little powdered green sealing-wax.

HOW AND WHERE TO SPIN.

A league of grass washed by a slow broad stream
That, stirr'd with languid pulses of the oar,
Waves all its lazy lilies and creeps on. . . .

TENNYSON.

I HAVE now dealt with the subject of pike-tackle,—and especially of spinning-tackle—in detail; the point that remains to be considered is, how and where to use it. If in this branch of the art the skill of our trollers has not left very much to be said that is *new*, I can at least undertake to advance nothing that I do not know to be *true*. The great object I have set before myself is to combine theory with practice; in every case carefully employing the latter to verify the deductions of the former.

To begin then at the beginning. The spinner being provided with the rod and tackle indicated, and baited with say a small dace or gudgeon, according to the instructions given at page 80, unwinds from the reel as much line as is necessary to reach the spot desired, and allows it to fall in loose coils at his feet.

He places himself 'half-facing' the spot to which he wishes to cast—that is, with the left leg and left shoulder further back than the right. The right hand grasps the rod some distance up the butt, and the left hand is employed in restraining the line, which should be so drawn in that the bait hangs from two to three yards from the top of the rod. First setting the bait in motion with one or two pendulum-like movements, to give it momentum, the spinner swings it vigorously out over the water, at the same time letting go the line altogether, and permitting the bait to run out to its full extent.

After allowing a few moments (according to the depth of the water) for the bait to sink, he lowers the point of the rod to within a foot or so of the surface, and holding it *at something approaching a right angle to the bait*, immediately begins drawing in the line with his left hand, making with his right a corresponding backward movement of the rod between each 'draw.' The effect of this backward movement (which to the spinner soon becomes a sort of mechanical see-saw), is practically to recover the position of the rod, which is deranged by each drawing in of the line—being, in fact, partly bent, and partly pulled forward by the 'draw,'—and the object is, to prevent the bait being stationary whilst the left hand is preparing for a fresh movement. In order to accomplish this compound operation satisfactorily, the most convenient plan is, to hold the rod firmly with the right hand, just below the lowest ring, letting the line pass between the upper joints of the middle and fore-finger, and resting the butt of the rod firmly against the hip.

In spinning from a punt, an agreeable change of posture is obtained by standing with the right foot on the side or well of the boat, and partially supporting the elbow and rod on the knee.

The 'draws', or pulls, and the corresponding movements of the rod must, of course, be varied in length and rapidity according to the depth of water, size of boat, and other circumstances; but a good medium speed, when the left hand, or rather the line, is carried well back, is about forty 'draws' per minute; and a cast for every two yards of stream fished, is the allowance which, on the whole, will generally be found the most advantageous.

The bait should not be taken out of the water until brought *close up* to the bank, or side of the boat, as it is not at all an uncommon circumstance for a fish, who has perhaps been following it all the way across, to make a dash at it at the last moment when he appears to be about to lose it.

When there is danger of throwing the bait into opposing trees or weed beds, it is well to let the line run lightly through

the left hand, the spinner by this means keeping, as it were, 'touch' of it, and being able to check it if he sees it is getting into danger.

The sort of thing that occurs when this precaution is not taken, is graphically described by Mr. H. B. Bromhead in a recent number of a sporting periodical.

There is something very artistic in being able to throw the spinning-flight properly. If the river is unnavigable, and old tree-trunks and reed-beds jut out from either bank every few yards, then the tyro or novice will come to grief before he has made many casts. He will speedily become 'hung up;' and if the flight is wound firmly round a willow branch, or deeply embedded in a patch of half-rotten reeds, then 'something must go.' Possibly he will put the strain on; but his hooks are highly tempered, and his gimp trace strong enough to tow a barge. At last a break occurs. The released line flies back into his face, and he hopes everything has come away clear. He is disappointed; for on that stout branch on the opposite side of the river, still swaying backwards and forwards, remain his flight, trace, leads, and perhaps two or three yards of line. But see; how does the practical spinner go to work? No bungling here, no erratic throws, no catching branches, no hooking into reeds, or other floating *débris*. The bait, properly leaded, shoots evenly and swiftly to the desired haven like an arrow from the bow. Right across the river, twenty-five yards if an inch, and it falls right under the drooping boughs of an old willow, in a quiet eddy caused by a small bay in the bank-line. With but little splash the bait drops into the water, and after sinking a foot or two is drawn evenly across the river. It is a pikey bit of water, a fringe of waving, rotting, sepia-tinted reeds bordering the bay. If any kind of the species *Esox lucius* possessed an especial retreat this is the one. Is master pike at home to-day? I think he is. A swirl in the water, a sudden resistance on the line, a gleam of light colour in the dark green depths of the river flowing smoothly along, as a mighty fish seizes the bait, and endeavours to return to his lair to munch his captive at his leisure. Not so fast, my friend. That 10 foot of greenheart and lancewood is struck upwards smartly, the line quivers like an arrow just embedded in the target, and a right royal battle has commenced. Gamely the fish struggles, vainly endeavouring to once more take up his quarters in those willow roots which for months past have been his home, a place carefully

avoided by every well-educated roach and dace in the water. It is not to be, though; two or three frantic rushes on the part of the fish, as many steady pulls by piscator, and master pike is brought within reach of the gaff or landing net.

The proper play of the rod, which is one of the most certain tests of a good spinner, is highly important, not only to prevent the stopping of the bait between the 'draws,' but in order to give it its full glitter and piquancy. It produces a more life-like motion, as it were, than that imparted by the mere pulling in of the line by hand or reel, whilst for some reason or other,—probably the greater elasticity of the lever used,—the spin of the bait is also far more rapid and brilliant.

The substitution of a mere mechanical motion for this combined movement of the hand and rod is, in my opinion, one fatal objection to what is termed the 'Nottingham style' of spinning, already adverted to, and thus described by Mr. Baily, the chief priest of the system, in his 'Angler's Instructor,' pp. 5, 6, 9, and 10.

You cannot have a reel too light or that runs too free. The best is a four-inch common wood reel, varnished to keep the rain from swelling the wood, the only brass about it being the hoop for fastening it to the rod. Brass inside and out adds to its weight and lessens its utility. To cast a long line you must have a free and easy running reel. . . . A line made wholly of good silk well plaited is the best for pike-fishing. Fifty yards of such a line ought to weigh no more than three-quarters of an ounce. . . . Well, having cast your bait as far as possible, allow it, if you are fishing in a pond, or lake, or deep water, to sink a little, say two feet; then wind away at a brisk rate, holding your rod on one side rather low; if no run wind out and throw again, but this time wind briskly four or five yards, then all of a sudden stop a moment, then off again, doing so three or four times in one cast. I have often found this a good plan.

If you still have no run, try another throw and wind briskly as before, but occasionally giving your rod a sharp and short twitch.

I have also found this an excellent method of using the spinner, but should it prove unsuccessful, here is another style: Throw as before, but on this occasion wind slow four or five yards, then with

your rod drag the bait one or two yards sharp through the water, stop a moment and wind slow again; you will sometimes find when resuming the slow winding process that your bait is brought to a dead stop, which, of course you must answer with a jerk of your rod. If you feel you have got a fish give him one or two more as quick as lightning, for you can seldom put the hook in firmly at the first strike. When you have got a run you will sometimes feel a sharp tug, but you will invariably be apprised of it by your line coming to a sudden stop, as if you had hooked a clump of wood. When you do hook a fish, give him line, but keep one finger on the reel, so as to preserve the line taut, and play him artfully. . . . When spinning in rivers where there is a strong current, take care to wind very slow, otherwise your bait will be always on the surface of the water.

The peculiarities of this system, as has been observed, are the substitution of a plain wooden for a metal check reel; the throwing *from the reel* (that is, leaving the momentum of the bait when swung out to *unwind* by its own impetus as much line as is required for the cast); and the winding in of the line *on the reel*, instead of the pulling of it in by the hand and rod, and coiling it loosely on the ground. This plan has doubtless some merits, and in the hands of really good spinners (and not a few such have adopted it) it may occasionally have a very slight advantage in *bank-fishing*, where the rough or scrubby nature of the ground renders the ordinary loose coils of the line liable to catch or tangle. But I think even in this case some light net or basket-work projecting shelf or tray, strapped to the hip of the troller, would be found a more satisfactory solution. A few years ago I had such a tray made of perforated zinc, which I found a great convenience in worm-fishing for trout, where it is constantly necessary to wade.

To test the fact that a loss of efficiency does actually take place when the reel-movement is substituted for the hand, the following simple experiment will suffice :—drop your spinning-bait into the water, and wind it in as fast as possible, on the Nottingham plan (that is, by the reel only), keeping the point of the rod stationary; then draw the bait through the water at

the same pace using the rod only, and it will be found that whilst a rapid spin is gained by the one, the effect of the other is little better than a 'wobble.'

These are the obvious theoretical objections to the Nottingham style as a system, which must occur to anyone accustomed to the Thames method of spinning. It is much to be doubted, however, whether practically it would be found even feasible with the very small baits and very light leads and traces constantly used on the Thames and other fine waters.

When fishing in the Avon some year ago with the late Mr. Frank Buckland, we came upon a party picnicing on the then dry eel-stage at the head of the pool above Bramore Mills. Whilst watching the performance for a few seconds we suddenly noticed a pike feeding upon the far side of the pool opposite the eel-stage. This distance appeared to be hopelessly great, the more so as there was no wind and my spinning-rod had been reduced to about eleven feet and a half, owing to its being fitted with a short top. However, at Mr. Buckland's instigation, and, perhaps as much to amuse the picnicing party as for anything else, I determined to make the attempt. As good luck would have it, at the very first cast the bait fell almost into the pike's mouth, and, after an exciting and amusing struggle the whole way across the mill-pond, we had him up, with the assistance of a gaff, on to the eel-stage, where he was duly admired. His weight was seven pounds.

The bait, lead, and trace were weighed, and together were found to be *one ounce and two scruples*, and the spot where the pike was hooked, which could be easily identified, almost touching the weeds right on the opposite bank of the pool, was subsequently measured by Mr. Buckland, who mentioned in one of his writings the fact that it was forty-two yards.

With such a bait and trace, such a cast would, I opine, be entirely out of the question if the bait were thrown from a reel in the Nottingham style. Mr. Baily's own bait and trace, which he furnished to me as patterns, weighed $3\frac{1}{8}$ ozs., nearly *three times as much.*

Before dismissing this part of the subject, I ought probably to mention the system not unfrequently adopted,—by Thames trout spinners more particularly—of winding in the line by making a figure of eight over the thumb and finger of the left hand, or—an alternative method—coiling it in a ball in the hollow of the hand. I fear that it would be impossible to give on paper such a description of either of these processes as would be of any use towards putting them into practice; I should rather suggest a few lessons from some experienced Thames spinner.

These two methods of drawing in the line are, it is to be observed, much more suitable to spinning such as that which commonly happens for trout and pike on the Thames—that is, in swift rushing water where the stream of itself suffices to spin the bait and very little auxiliary movement is required—than to the case of ordinary river or lake spinning where the line has to be pulled in rapidly in order to prevent the bait sinking.

As to the Where of spinning, there is no open water, whether pond, lake, river, or canal, in which it is not applicable, and I really hardly know to which I should myself give the preference as a matter of taste. I decidedly prefer, however, shallow to deep water for spinning, as in deep water it is difficult to insure that the bait is seen by the fish—a somewhat important point—and, indeed, when the spinner is no longer able to see or imagine that he can see the river bottom, it is difficult for him to judge at what precise depth he ought even to attempt to spin.

It is in the case of pike-fishing, in fact, as with most other fishing—the best place to fish is not where most fish are (or are supposed to be) but where they can most easily be fished for and caught. Some of the prettiest spinning that I have ever had has been in water from a foot-and-a-half to two-and-a-half or three feet deep where the great difficulty has been to make the bait spin 'shallow' enough. I have in my mind's eye just such a spot below Braemore Bridge on the Avon already

spoken of. The river is about forty yards wide and the bottom pretty thickly coated with weeds which, however, form a capital hide for the pike that come up on to these shallows no doubt partly for the purpose of feeding on the young trout that are hatched in the spawning beds above and around. On this piece of water, which belongs to Sir Edward Hulse, when fishing with a friend some years ago, either he or I, I forget which, caught twenty pike in half-an-hour without moving sixty yards from the spot where we commenced.

About half a mile below this again, opposite the farmhouse, there is another still wider and shallower stretch, perhaps seventy or eighty yards across in the widest part, one of the surest takes for pike on the whole river. A short time ago I caught fifteen pike, most of them small however, out of this water, wading out for the purpose some dozen yards from the shore. Whenever I could manage to make a good cast into the stream, I think I should be within the mark in saying I never failed either to run or to move a fish. How many more I could have gone on catching out of the hundred yards of gravelly shallow in front of me it would be difficult to say, but my baits gave in, and the artificial bait, though moving several, failed to actually touch a single fish.

This is one of the instances I always call to mind, when considering the efficiency or inefficiency of artificial pike-baits in general. Here was a piece of water literally swarming with pike, evidently on the feed, and where I had been catching or moving the fish at every cast with the natural bait. The artificial bait is substituted, and, presto! the whole scene changes. Not a pike can be tempted by my carefully prepared Phantom or Archimedian (I believe I tried several varieties) although flaunted before their eyes with a 'damnable iteration' which one would think would have tempted a run if only from provocativeness.

Some old author, indeed, would lead us to think that the pike is, *par excellence*, the *irritabile genus* of fish society. He says that if a pike refuses a bait when thrown in the proper

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manner in front of his head; the great art is to repeat the process with still more emphasis behind his tail. The philosopher quoted from asserts that where this plan has been pursued in a scientific and persevering spirit he has seldom or never known it to fail!

One of the delights of pike-spinning over such shallow waters as those I have been mentioning, is that you are able to see the approach of the enemy, and even to some extent to calculate his dimensions by the wave which he carries in front of him as he rushes after the bait. This, it may truly be said, is an excitement added, and one which cannot be had in any other branch of the art except, perhaps, in a lesser degree, in chub fishing.

The moment is, indeed, not only exciting, but critical, and is a severe trial to the nerves of a young beginner. The inclination is almost irresistible to check or entirely stop the action of the bait so as to let the pursuer get hold of it. On the contrary this is the very moment when the speed of the bait should be preserved unchecked at its normal rate of progression. The moment the bait is checked it ceases to be a spinning-bait, and becomes a mere dead gudgeon or dead dace, and having no further attraction or incitement for predacious fish.

> You are Ugudwash, the sun-fish,
> You are not the fish I wanted—

to misapply Hiawatha's angling expedition. The rest of the passage is so charmingly original that really, even at the risk of being 'impertinent' (to use the word in its Pickwickian sense) I must quote it, the more so as the hero of a part of the adventure is 'the pike, Kenozha.'

HIAWATHA'S FISHING.

> Forth upon the Gitche Gumee,
> On the shining Big-Sea-Water,
> With his fishing-line of cedar,
> Of the twisted bark of cedar,

Forth to catch the sturgeon Nahma,
Mishe-Nahma, King of Fishes,
In his birch-canoe exulting,
All alone went Hiawatha.
Through the clear, transparent water
He could see the fishes swimming
Far down in the depths below him;
See the yellow perch, the Sahwa,
Like a sunbeam in the water,
See the Shawgashee, the craw-fish,
Like a spider on the bottom,
On the white and sandy bottom.
At the stern sat Hiawatha,
With his fishing-line of cedar;
In his plumes the breeze of morning
Played as in the hemlock branches;
On the bows, with tail erected,
Sat the squirrel, Adjidaumo;
In his fur the breeze of morning
Played as in the prairie grasses.
On the white sand of the bottom
Lay the monster Mishe-Nahma,
Lay the sturgeon, King of Fishes;
Through his gills he breathed the water,
With his fins he fanned and winnowed,
With his tail he swept the sand-floor.
There he lay in all his armour;
On each side a shield to guard him,
Plates of bone upon his forehead,
Down his sides and back and shoulders,
Plates of bone with spines projecting!
Painted was he with his war-paints,
Stripes of yellow, red, and azure,
Spots of brown and spots of sable;
And he lay there on the bottom,
Fanning with his fins of purple,
As above him Hiawatha
In his birch-canoe came sailing,
With his fishing-line of cedar.
'Take my bait!' cried Hiawatha
Down into the depths beneath him:

'Take my bait, O Sturgeon, Nahma!
Come up from below the water,
Let us see which is the stronger!'
And he dropped his line of cedar
Through the clear transparent water,
Waited vainly for an answer,
Long sat waiting for an answer,
And repeating loud and louder,
'Take my bait, O King of Fishes!'
Quiet lay the sturgeon, Nahma,
Fanning slowly in the water,
Looking up at Hiawatha,
Listening to his call and clamour,
His unnecessary tumult,
Till he wearied of the shouting;
And he said to the Kenozha,
To the pike, the Maskenozha,
'Take the bait of this rude fellow,
Break the line of Hiawatha!'
In his fingers Hiawatha
Felt the loose line jerk and tighten;
As he drew it in, it tugged so
That the birch-canoe stood endwise
Like a birch log in the water,
With the squirrel, Adjidaumo,
Perched and frisking on the summit.
Full of scorn was Hiawatha
When he saw the fish rise upwards,
Saw the pike, the Maskenozha,
Coming nearer, nearer to him,
And he shouted through the water,
'Esa! esa! shame upon you!
You are but the pike, Kenozha,
You are not the fish I wanted,
You are not the King of Fishes!'
Reeling downward to the bottom
Sank the pike in great confusion,
And the mighty sturgeon, Nahma,
Said to Ugudwash, the sun-fish,
'Take the bait of this great boaster,
Break the line of Hiawatha!'

Slowly upward, wavering, gleaming
Like a white moon in the water,
Rose the Ugudwash, the sun-fish,
Seized the line of Hiawatha,
Swung with all his weight upon it,
Made a whirlpool in the water;
Whirled the birch-canoe in circles,
Round and round in gurgling eddies
Till the circles in the water
Reached the far-off sandy beaches,
Till the water-flags and rushes
Nodded on the distant margins.
But when Hiawatha saw him
Slowly rising through the water,
Lifting his great disc of whiteness,
Loud he shouted in derision,
'Esa! esa! shame upon you!
You are Ugudwash, the sun-fish,
You are not the fish I wanted,
You are not the King of Fishes!'
Wavering downward, white and ghastly,
Sank the Ugudwash, the sun-fish,
And again the sturgeon, Nahma,
Heard the shout of Hiawatha,
Heard his challenge of defiance,
The unnecessary tumult,
Ringing far across the water.
From the white sand of the bottom,
Up he rose with angry gesture,
Quivering in each nerve and fibre,
Clashing all his plates of armour,
Gleaming bright with all his war-paint;
In his wrath he darted upward,
Flashing leaped into the sunshine,
Opened his great jaws and swallowed
Both canoe and Hiawatha!

On the principle of the 'penny dreadfuls,' this is the proper place to take leave of Hiawatha, and if there are any of my readers who do not know the sequel to his 'prodigious fishing,' I must refer them to the poem itself, to my mind far the most

original and fascinating of any of the writer's longer poems. But this is digressing.

To return to my text, the Where of pike-spinning. I have said that the spots to select are, as a rule, rather where fish can be caught, than in 'unfishable' waters where they are known or supposed to be more numerous or larger. The water below my shallow on the Avon furnishes a very good example of this. Some way lower down it becomes a narrower and much deeper stream, and it is here that Sir Edward Hulse's keepers and water-bailiffs locate their best fish and the most of them. Whether they are there or not I cannot say, though the water, I admit, looks exceedingly well calculated to hold heavy fish, but this I can say, that my attempts to fish it with the spinning bait have never been really successful—I mean in the way of making a good bag.

There is another reach of the Avon lower down called Sandy Balls, overhung by the romantic beech and fir-covered cliffs of the New Forest, which local superstition peoples with pike of altogether pre-historic dimensions, yet I have never succeeded, that I can remember, in catching a pike out of this celebrated 'hold,' nor have I ever seen anybody else do so. In the 'drawns' and shallow rushes of water, on the contrary, by which the mazy stream is tapped in order to water the surrounding meadows, I have had excellent sport, repeatedly killing pike of nine or ten pounds weight, out of a stream where it seemed almost too small to throw the spinning bait.

Below one of these rushes or sluice-gates a curious incident happened to my wife, in the presence of myself and the late Lord Anglesey's keeper. I thought the double capture sufficiently remarkable to be sent to the *Field*. 'When pike-fishing to-day with my wife in Lord Anglesey's water on the Avon, a very singular circumstance happened. Mrs. Pennell, when spinning above the Flax Mills, caught *two pike at the same time*. The first fish was hooked in the usual way, and about a foot and a half above the flight of hooks a second fish was found, twisted up in the gut trace, the line having

made a very Calcraft-like noose just below the gill-covers. The fish weighed about 2 lbs. and 3 lbs. respectively.' I have seen a good many curious captures of pike, but never in my knowledge, nor that of the keeper Jeffries, has a similar 'double event' been known to have occurred on the Avon.

There is a 'drawn' between Braemore and Downton which, whilst little more than a watercourse and nearly dry at many parts of the year, in one corner by the sluice-gate always contains enough water to harbour a pike; and a pike the water almost always contains, generally a large one. On one occasion I remember running two fish from it in two consecutive casts, one 9 lbs. which I basketed, and the other, as my old henchman Sandy would have said, 'fully bigger,' which, for want of a gaff, I lost, after actually getting it out on to the bank, from whence it rolled back.

This circumstance is alluded to by the late Mr. Frank Buckland, with whom I first made the acquaintance of this part of the valley of the Avon. His account of some of the episodes of the joint expedition is so humorous and graphic, that with the reader's (and Mr. Bentley's) permission I must quote a few extracts from it.

JACK-FISHING ON THE AVON.

We came down the incline into Salisbury by the express train at a fearful pace; round the curves and over the embankment we flew with a speed that took one's breath away, and dashed into the station like a comet.

A rush for a fly (for it was fair-day), and off we went to the Star hotel, Fordingbridge, where we were cordially welcomed by the civil and obliging landlord and his wife, Mr. and Mrs. Bill, and our friend Mr. Cholmondeley-Pennell, who preceded us in order to try experiments on the Hampshire jack, which were said to abound in the deep waters of the Avon. 'What sport?' said I. 'I have had four days' fishing and have caught thirty jack out of thirty-six runs (the largest fish running between six and nine pounds) with a spinning-bait. The water, however, is very bright and the weeds very high. I have got an order for a splendid place to-morrow, and hope we shall have luck.'

Accordingly on the following morning we got ready for the start. Great cans with the bait; the rods, luncheon, tackle, &c., were all placed in the landlord's four-wheeler, and in we jumped.

'I will drive,' said Pennell; 'all right behind? let go.'

The ostler let go, but not an inch would our noble steed proceed; she put back her ears, shook her head, and made an attempt to kick, foiled, however, by the kicking strap. The ostler then tried persuasion, but it was no use; the mare reared back and made another false start.

The coachman then touched her with the whip, and we were off at last, first a walk and then a trot and then a gallop. We had not gone ten yards when the mare all of a sudden turned right round in the shafts; she first wheeled to the right and then suddenly to the left, the four-wheeler going in the opposite direction. She then began to kick, and backed right into the railings. Out went the landlord and the ostler from behind, coachman and myself from the front.

I was nearest the railing, and took a Leotard-like leap over it, mercifully not falling, for in an instant down came the mare on her side with a crash, breaking both shafts short off, and kicking and plunging furiously. She did not, however, touch me, though I was between her and the railing; but it was a very narrow escape. We disentangled the mare, who was not much hurt; picked up the live bait, which were flopping about in the dusty road; and walked back to the hotel as dignified as circumstances would permit.

Another horse was then put into a borrowed dogcart, and we had just got to the place of the former accident, when the shafts began to elevate their noses in a most unpleasant manner; the old grey seemed to be walking on his toes, being almost lifted off his legs.

'Out with you, gentlemen,' said the landlord, 'or we shall all be over again;' so we all jumped off like artillerymen from a gun-carriage.

'Is this what you call going out jack-fishing, Pennell?' said I. 'I don't see much chance to-day. We have been just two hours getting ten yards from the door, the live-bait is dead-bait; and one of the rods is smashed.'

'Never mind,' said Pennell, 'let's go into the garden and catch some more bait.' . . .

Away we went once more, this time getting a fair start.

We soon arrived at the mill where we found the keeper awaiting

us. He seemed rather surprised at our small baits, 'For,' said he, 'in the winter we generally use very large tackle, and fish with a roach from half to three-quarters of a pound in weight; but I think Mr. Pennell's tackle very good to spin over the weeds, which are terrible thick about.'

The keeper was right; the river was one mass of dense solid forests of weeds, which moved about in the rapid stream like great sea-snakes. Between them, however, were here and there streets and lanes of beautiful deep water, looking almost ink colour on account of its depth and the darkness of the weeds, the water itself, however, being as clear as crystal.

'Have you any large jack about here, keeper?' said I. . . .

'Yes, we have, sir, and I will tell you a curious thing: One day I put into the stew pond a jack that had a gorge hook in him, for the gimp was just sticking out of his mouth. I did not take him again for six months, and when I came to look at him I could not find the hook at all. As I was cleaning him, something hard struck upon the edge of the knife, and I found that it was the gorge hook that had worked itself right through him, and was nearly coming out. It was quite loose in the intestine, and did not seem to have injured the fish, for he was in good condition, and I know he fed while he was in the pond. But, hark! your friend, Mr. Pennell, is crying for the gaff. We must be off, sir. Run! it's a good fish, from the bend of the rod.'

We had first to cross a water 'carrier,' as they call them in these parts. Off we both started as hard as we could go, the keeper going easily over a foot-board bridge, and I myself floundering, head-over-ears, bang into the muddy water and rushes, and getting my first wetting for the season. . . .

'It's terribly hot!' said Pennell; 'how I envy those cows in the water! I have been a long way up stream, and this is what I have got. I saw a beautiful quiet dyke, about five yards wide, and at the first cast I was delighted to see a huge wave issue from the side of the bank. Slacking [?] the speed of the bait, I let him have it fairly, and struck him as he turned for home; he made a gallant five minutes' fight, and has left this "line-cut" on my finger as a mark of his prowess.

'As I knew these big jack often hunt in couples, I had another cast, and hooked an equally fine fellow, within two yards of the spot where I caught the first, but I unluckily lost him, when at the last gasp, for want of the gaff, which, by the way, I see sticking

out of that capacious pocket of yours. The fish I "now produce" (as the lawyers say) will turn the scale at 9 lbs.

'I found the sun very powerful, and my head would have ached considerably if I had not adopted my usual plan, which is to put a handful of water weeds in the crown of my cap; it keeps the head as cool as a cucumber.'

'Well, I suppose I must give *you* a wrinkle in return for this,' said I. 'Do you know how to keep away midges and mosquitoes when you are fishing?'

'No, I do not,' said Pennell.

'Neither did I, till last night when reading that delightful book, "Life in Normandy," I learnt that *turpentine* (I suppose spirit of turpentine is meant) will keep off all the midges in the parish. The author, a true sportsman, says: "It is singular how little this is known. Many a man has suffered martyrdom when a single drop of this turpentine would have protected him as effectually as a coat of mail, and allowed him to enjoy a good day's fishing. . . ." If I were about to fish in a "midgy" locality, I should order the chemist to make up the turpentine in what we doctors call an "elegant formula," which he can easily do; and an ointment thus made can be agreeably spread on the skin of the face and hands.' . . .—BUCKLAND'S *Curiosities of Natural History.*[1]

I have often since then reaped the benefit of this wrinkle given me by my old friend and comrade—one of the most genial and charming of companions, and a true lover of nature in all her moods. On the first opportunity I took Buckland's prescription and found it excellent. I had the turpentine made up as he advised in an 'elegant formula,' the actual compound admixed being glycerine jelly; and I remember on one occasion by Kylemore Lough in Galway, being so tormented with midges night and day, that but for the turpentine, which acted like a charm, I must have been fairly driven out of the neighbourhood. My two friends, who scorned to adopt any precautions, actually *were* driven out of the house in the middle of the night, and up to the top of a neighbouring hill for relief.

The admixture of glycerine makes the 'anointment' far

[1] Richard Bentley and Son, New Burlington Street.

from disagreeable, and in hot suns will prevent those unpleasant excoriations and reddenings which, about August, we are all familiar with on the noses of our Norwegian tourists, 'Alpine' climbers and nomadic brethren of the angle generally.

I would have given a handsome sum for just a thimbleful of the 'anti-midge mixture' one day last August, when grouse shooting in Kirkcudbrightshire with Mr. J. Colzean Kennedy. At about four o'clock, when on tolerably high moorland, we were suddenly enveloped in a swarm of almost invisible tormentors. Eyes, nostrils, ears, even between our shirts and our necks, they clustered like bees. In vain we slapped the afflicted parts with more energy than direction; in vain we lit up pipes all round and blew the wildest of 'clouds;' the whole party, dogs included, rubbed, scratched, and, I daresay, swore; and if we had happened to find birds at that moment, I doubt if even the well-known science of my friend Mr. Kennedy, 'top-weight' as he is both at Hurlingham and the Gun Club, would have added greatly to the 'bag.'

But to return to my text. It is, I believe, a great fallacy to suppose that large pike are more likely to be found in large deep waters, than in such quiet and undisturbed nooks, where anglers come but seldom, and the supply of baits is usually abundant. In just such a spot as that above described I once saw a pike which I am satisfied must have weighed nearer 30 than 20 lbs. With my heart in my mouth I crept up to the edge of the 'drawn,' about twenty yards from where he was lying, and made my cast. It was neck or nothing as I knew, because if he did not take the bait on the first impulse, he would be inevitably scared and take refuge in his lair of water lilies, from which there would be no tempting him.

The bait fell exactly as I desired, and it had hardly touched the surface when there was a sudden boiling and up-tearing of the water, as the monster rushed hither and thither in his efforts to seize the bait. Alas! he missed it, although I am bound to say, in justice to myself, that I did not violate my own canon of neither checking nor expediting its motion.

Further attempts were, as I expected, useless, and the same afternoon I was called away, so that I never had another opportunity.

One other illustration. At Lord Normanton's water at Somerley, finding one day but little sport in the main stream, I asked the keeper if there were no drawns or shallow water-courses leading away from it, where I might be able to throw a spinning-bait. His reply, after some consideration, was that there certainly was one, but that he would not say what fish there might or might not be in it; on the last occasion, however, when it was fished by some troller more enterprising than usual, nothing was caught, although he thought there ought to be some pike there. The description appeared to me quite sufficiently tempting, and, without more delay, I begged him to guide me to the unknown land, or rather water. Here I hooked a fish almost at the first cast, and, in fine, I went on catching them one after another until sixteen good sized fish had bitten the dust. I was so struck by the extraordinary rapidity with which I was catching them, that I asked a gentleman who accompanied me to notice how long it was since I began. On completing the sixteenth fish, and there appearing to be somewhat of a falling-off, I asked him to look at his watch, and it was found that the time, from first to last, including that necessarily occupied in baiting, was very little over thirty minutes.

But, alas! the glorious days of Avon pike-fishing are, I fear, numbered. Many of the riparian owners, in their eagerness to encourage salmon and trout, have ruthlessly killed down the pike, with the result that on the last two or three occasions of my visits the sport has been comparatively poor, in size as well as numbers. Once upon a time there was a fair sprinkling of splendid trout in the Avon, running from three to ten pounds and upwards, which afforded magnificent sport to men of the 'Thames trout-fisher stamp of mind,' whilst the pike-fishing was simply superb.

Now the river is first rate for nothing; moderate for pike;

moderate for trout, of which there has been some slight increase in numbers at the expense of size; and very moderate, indeed, for salmon, although I must frankly admit that, partly owing to his indomitable perseverance and skill and partly to his having the command of some of the best pools on the river, my friend Mr. Turner-Turner, of Avon Castle, has killed a very considerable number of splendid fish in his waters—on one occasion, if I remember rightly, landing no less than three, averaging twenty pounds a-piece, before breakfast.

One swallow, however, does not make a summer, and, if I were offered the range of the best salmon casts on the Avon from mouth to source, I should decline with thanks. Men's tastes differ, but for myself I must confess that the chance of dropping upon what Dougal calls a 'happenin' baste' does not sufficiently gratify my 'hunting' instincts. In my opinion sport consists primarily in catching something, and if I cannot make pretty sure of at least two or three salmon a day, irrespective of size, commend me to the nearest stream or loch where I can fill my creel with trout. If trout cannot be got in 'remunerative' numbers I would try pike-fishing; or, failing pike, perch-fishing; or, failing perch, roach-fishing; or, failing roach, gudgeon-fishing—any fish, in fact, which will afford the amusement of catching as contrasted with endeavouring to catch. I am afraid my ethics will recall the Frenchman's idea of an Englishman. 'O, what a fine day! Let's go and kill something!' . . . The mistake the Frenchman made was in supposing that it was the love of killing instead of the love of sport. And yet what is sport? Would it be sport if there were no killing anything? But this is becoming casuistic.

I have not that fierce thirst upon me which can only be slaked with salmon blood, to quote the expression of my dear old friend, Willie Peard, whose charming writings have given delight to all lovers of fly-fishing, and who was himself one of the most brilliant performers in practice of the art which he so eloquently described in theory.

Some time ago the Thames Angling Preservation Society

were strongly urged by a few fanatics to take means for turning the Thames into a trout stream—a salmon river also, if I remember rightly—at the expense of its ancient inhabitants, the pike. At the time this attempt was made I took the opportunity of expressing my views on the subject in a leading angling journal, and, as the warning which I then endeavoured to give, I hope not altogether unsuccessfully, is not without application to other rivers similarly situated and threatened, I here reproduce it:

THE PRESERVATION OR NON-PRESERVATION OF THAMES PIKE.

There is a rumour that an attempt is being made to excite amongst fishermen a feeling hostile to the Thames pike, on behalf and in favour of the trout which the Thames Angling Preservation Society have been for some time past industriously breeding at Hampton, and turning into the river; and also that this 'trout mania,' if the expression is admissible, is now alleged as an excuse by a good many fishermen for an indiscriminate slaughter, by fair means or foul, of all pike that may fall into their hands, whatever be their size or condition. I trust this report may prove to be unfounded, or at any rate greatly exaggerated; but yet I have generally found the proverb true, which says that there is 'no smoke without a fire,' and therefore as one who, in common with, I am sure, thousands of my fellow-trollers, has stored up many pleasant memories of many pleasant days spent amongst the 'lazy lilies' and pikey pools of the Thames in pursuit of this fish, and the sport against which a set is now, it appears, being made, I cannot allow the occasion to pass without raising my voice in terms of strong warning and protest,—protest against the unsportsmanlike proceedings alluded to, and warning against the strong delusion on which they are apparently based. Moreover, even if the reports of what has actually occurred have been exaggerated, there is another very excellent proverb, more generally acknowledged

than acted upon, which says that 'Prevention is better than cure.' The 'strong delusion,' then, to which I refer is the assumption (under whose *ægis* these *quasi* judicial murders are being perpetrated and winked at) that the Thames can be denuded of its pike, and can be made a trouting river—a river, that is, capable of maintaining a sufficient stock of trout to offer the angler a fair day's wage for a fair day's work; in other words, to enable him to calculate upon a certain number of fish in his creel as the probable result of a given expenditure of time and skill. If a river will not do this, it is worthless to the fly-fisher, and is not a trouting river in the only valuable sense of the term. Now, is there any chance of such a consummation so far as the Thames is concerned? Let us see what are the facts of the case.

The first fact is that the pike could *not* be destroyed; not only not absolutely, but not even so as practically to affect the trout question at all. How, indeed, can it be expected that a few years of permissive poaching under the Thames Angling Preservation Society, should effect what all the combined efforts of netting, trimmering, and every conceivable mismanagement and abuse for centuries have been unable to accomplish? What could, and probably would, be accomplished, would be to reduce the stock of pike just sufficiently to make the river entirely unattractive to Thames trollers, of whom there are at present, I believe, somewhere about twenty for one trout fisher.

But supposing, for the sake of argument, that the pike could all be destroyed, and that the Society continued, or increased their trout breeding operations, is there good ground for believing that the river could ever be made a trouting stream, in, as I have already pointed out, the only useful sense of the term?

So far from it, the assumption, nay, I may say the certainty, is exactly the opposite way; and I will undertake to prove to any unprejudiced mind, not only that the change would fail to improve the trout-fishing which already exists, but that it would be positively detrimental to it.

What are the peculiar characteristics; the essential natural conditions of trouting rivers? Are they not shallows, sharps, gravels, scours, eddies, mill-races, and every other form and combination of swift-running water from mouth to source? the very antithesis, in short, in every particular of the still, weedy, slow-gliding Thames, with its miles of reed-bed and clay banks, and its interminable 'deeps,' in which nothing but the shadow of the trees seems to have movement? Now every one who has given much study to questions of pisciculture knows that certain naturally adapted conditions of soil and water are indispensable to the wellbeing of certain kinds of fish—as, for instance, to the grayling clay, to the pike weed, and to the trout the class of water I have attempted to describe; and that you might as well expect to produce a large stock of either of them without such natural adaptation as to cultivate pine-apples at John o' Groat's, or ptarmigan in the plains of Hindostan. I unhesitatingly assert, therefore, without fear of contradiction, that the Thames is, and always will be whilst it remains cut up into a series of lock ponds, totally and irremediably unfit for a trouting river; and I challenge the mention of any single instance of an English river analogous to it in which similar results are not found to obtain. The Hampshire Avon, perhaps, in some portions of its course, presents more points of resemblance than any other river with which I am acquainted, the part of locks being performed by a succession of mill-dams and eel-stages, with slow-running, often deep, always weedy reaches between; and here we find almost identically the same conditions as regards fish—viz., plenty of pike, and a few large trout. Or I might take the river Lea as probably an equally good instance, and one perhaps better known to Thames fishermen. But go where you will, I believe you will find the rule to be Medo-Persian in its unchangeableness.

And this brings me naturally to the second point which I have undertaken to prove—that even the at-present-existing trout fishing would suffer rather than gain by the deterioration of the pike. At present the river contains a fair sprinkling of splendid

trout, of almost unequalled size. The pursuit of these affords a keen excitement to a number of first-rate fishermen, both trollers and fly-fishers—men whose skill, which has been considered unequalled, is only surpassed by the patience with which, day after day, and even week after week, they will pursue some one of these historic leviathans, pitting their brains against his (perhaps almost as highly educated !) and at last hauling him gurgling into the net, after a death struggle the excitement and triumph of which has been multiplied in an exactly corresponding ratio to the number of hours of toil and thought they have expended in achieving the result. The capture of one of these monster Thames trout is indeed, *par excellence*, the 'blue riband' of angling; and it is probable that there is no other feat, not even the killing of a 40-lb. salmon, which is so often looked back upon with pleasure, and recounted with pride in after days. It seems really almost doubtful, therefore, whether a slight increase in the number of these great trout would produce a corresponding increase of pleasure, as whatever tended to diminish the difficulty would, of course, equally diminish the honour and gratification. If this should sound somewhat Quixotic let it be borne in mind that the Thames trout-fisher in very many, probably, in the great majority of cases, is not a tyro or Cockney angler, far less a mere pot hunter. He has probably had his surfeit of the best sport, whether with trout or salmon, that the three kingdoms—and perhaps Norway and Canada also—can offer. He has wetted his flies in the swirling pools of the Blackwater or the Thurso, or filled his creel to his heart's content by the teeming waters of the Driffield or the Itchen, the Test or the Teme; and therefore he is satiated with slaughter, or he is getting old, and 'with stiff limbs and frosty pow' cannot shoulder, as of yore, his twenty-foot Castle Connel; but at any rate, he requires a peculiar class of fishing to give him any peculiar pleasure, and that pleasure he finds in killing a big Thames trout. And therefore, as I have said, it really seems doubtful whether anything that tended to diminish the difficulty

of catching the said trout would not also somewhat diminish the general fund of amusement yearly derived from the sport; but if this slight increase in numbers was to be accompanied by a corresponding decrease in size, then assuredly the fisherman would 'gain a loss' and nothing else; and that such would actually be the effect of impoverishing the stock of pike seems inevitable. For what says experience? Why, that a given water will only support a given quantity of fish of a particular breed, and that you may take that quantity out either in numbers or in weight, but not in both. All waters which breed a heavy stock of pike breed, if any, trout correspondingly large. This is the case in both the rivers which I have already mentioned, and the rule seems to hold good as well in lakes as in rivers. Take, for example, in the three divisions of the kingdom the three lakes most celebrated for the great size of their trout—viz., Windermere in England, Awe in Scotland, and Corrib in Ireland, and what do we find? Why that all three are almost equally celebrated for the number or size of their pike. So that in fine 'the greater the stock of pike, the larger the size of the trout,' may be almost taken as the formula of the question.

The conclusion, then, which I would earnestly desire to press upon all my brother fishermen of the Thames, is—Make the best of what you have got, and in grasping at the shadow do not drop the substance; instead of attempting to destroy, preserve by every possible means your pike, from which we have all had so much sport for so many years; and, as the most obvious and important rules, do not begin killing them until the beginning of July or middle of June, at the earliest, and *then throw in again all that are under a pound and a half in weight*,—by which two means you will ensure (1) that your pike shall not be killed until they are in decent condition for the table; and (2) that before being killed at all they shall have had the opportunity of contributing at least once towards the replenishment of the stock of the river.

With regard to the *direction* in which to cast the spinning-bait 'doctors disagree,' although, so far as stagnant waters are concerned, little difficulty can be felt, as the obvious rule is to cast over the place in which the fish are judged most likely to be. With rivers, however, the case is different, and the cast straight *across* stream and the cast straight *down* stream have both had their advocates. If the late lamented Mr. W. C. Stewart had been a pike fisher, no doubt he would have recommended the cast straight *up* stream. . . . As in other matters, I believe that the truth here lies midway between the two extremes advocated—between, that is, the straight across stream and the straight down stream theories. And putting aside exceptional circumstances, which, of course, make their own rules, the best direction in which to cast with the spinning bait over running water is *diagonally*, or in a direction rather slanting down and across stream.

This conclusion would seem to be unavoidable if we consider what are the objects to be attained. They may be stated thus :—

'To cover the greatest extent of water within a given time ; to present the bait in the position most attractive to the fish ; and to make sure of hooking him when he takes it.

Now, to begin with the first of these *desiderata*. It is clear that by drawing the bait from one side of the stream to the other the greatest area of water will be fished, and for this reason—that in order to give the proper intervals between the casts when throwing straight down stream, it would be necessary to move the boat across the current a yard or two at a cast until it reached the other side, and then *drop down stream* twenty or thirty yards before a fresh series of casts could be commenced, whereas when thrown diagonally or across, it is only necessary to let the boat drop down on one side of the river without delay or hindrance. Moreover, supposing the spinner to be without a boat, he would, if he confined himself to casting down stream, never be able to fish more than one side of the water, and that close to the bank.

Thus, in the question of the amount of water covered, the 'cast down stream' must be held to be radically bad, the arguments being about equally divided between the 'cast diagonal' and the 'cast straight across;' but on the second point, viz. the presenting of the bait to the fish in the most attractive manner, the advantage will be found to be all in favour of the diagonal mode of casting.

The fish, it will be remembered, lie with their heads *up stream*, and the object must, of course, be to show them the bait, whilst showing them at the same time the least possible proportion of the line or trace. Bearing this point—and a most vitally important one it is'—in view, the cast straight *down* stream will again be at once 'put out of court,' inasmuch as it is evident that, except at the very extremity of the cast, the whole of the line and trace must pass right over the fish's eyes before he can possibly see the bait. The question, therefore, narrows itself as between the 'diagonal' and 'straight across' casts; and as the cast diagonal fishes at least one-third more water than the cast straight across without any counterbalancing drawback, and indeed, with an additional gain in the item of making the bait spin better, inasmuch as it is worked the whole time more against the stream, it can hardly be doubted that the jury will find a verdict in favour of the diagonal cast, for all ordinary river spinning.

STRIKING AND PLAYING.

So far as to casting. Presuming the spinner to have 'run' a fish, the next point is to *strike* him, a part of the performance which is much more critical than many trollers are, perhaps, aware of. Whatever may be the case as to 'striking from the reel' in the instance of salmon or trout fishing when only a single, or at most a double, hook has to be made to penetrate over the barb, there is no doubt that in fishing for pike with a large bait, decorated with some half-a-dozen hooks, striking with a tight line is most essential to the proper hooking of the fish.

The usual manner in which a pike seizes the bait is cross-wise, and in this position it is probable that the points of several hooks will be pressed upon by some part of the mouth, whilst the bait also to which they are attached is held by his sharp teeth and powerful jaws. The whole of this resistance must be overcome, and that sharply and at a single stroke, before a single hook can be expected to penetrate. Nor does the action of the fish himself, as in the case of salmon-fishing with the fly, tend to drive the hooks home. The salmon, as soon as he has taken the fly, turns head downwards, and discovering probably, almost instantaneously, the deception that has been practised upon him, instead of holding on to, naturally lets go of the fly in his mouth, the result of the two opposite simultaneous evolutions being, with considerable probability, to strike the hook firmly in. In the case of the pike all this is reversed. The pike does not, as a rule, immediately turn in the opposite direction, nor has he the slightest inclination, at any rate for some few brief moments, to eject the bait which is not a sham but a reality.

What he does do is generally to sail about quietly with the bait in his mouth, sometimes holding on to it, and even apparently tugging at it more or less vigorously until brought up close to the side of the boat, leading the inexperienced spinner to imagine that he has been hooked, whilst, in point of fact, for the whole time he has only been 'holding on.' When frightened, or, perhaps, when realising that there is something abnormal about the bait he has just seized, he will—I was about to say, drop it, but that he cannot do owing to the nature of his jaws and his teeth—he will free his mouth from it by a vigorous shake, somewhat after the action with which a terrier shakes a rat.

It is at this moment that the best chance lies of the pike hooking himself, but it is, at the best, evidently a very uncertain one, and I should advise the troller not only to strike as soon as he runs a fish, but to *continue* striking until the fish commences a sort of tearing struggle, which is a very different

thing to the sensation produced by his only holding on to the bait. The stroke should be as hard as the tackle can bear with safety. I have repeatedly, on the bright shallows of the Avon, been able to watch exactly the effects of my stroke both upon the bait and upon the pike, and I have been astonished how little result of any kind is apparently produced except with the very hardest blow.

Sometimes, however, and especially where a pike is hooked at the end of a long cast, it is almost impossible for the troller armed with civilised gear, to strike a pike effectively, and in such cases he must take his chance, never, above all things, allowing slack line for an instant. The argument as to the difficulty of getting a number of hooks to penetrate was, of course, vastly increased with the old-fashioned form of three triangled spinning flights. With such flights it has been calculated that a loss occurs of certainly not less than fifty per cent. of the fish run.

This may, probably, seem an excessive average, partly because few fishermen keep an exact register of their runs and losses during each day's sport, but of corroborative testimony as to the fact being as stated, there is an *embarras de richesses.* One has been already given at page 81–2, from a recent writer in the *Fishing Gazette.* Here is another from the visitors' book at Slapton Leigh Hotel:—'Oct. 8, 1862—Mr. Clarke caught ninety-one pike—all by spinning—and lost ninety-three others after hooking them.' Robert Salter refers to these losses in his 'Modern Angler,' second edition, page 103, where he says, 'Snap-fishing (spinning) cannot be considered the most certain method of taking pike, because so many are missed after striking them.' Professor Rennie, in his 'Alphabet of Angling,' also mentions the fact, but attributes it to the pike not being a leather-mouthed fish. Salter, who is entitled in some sense to be considered the 'father of spinning,' as Nobbes was called the 'father of trolling,' was, no doubt, a skilful performer, probably one of the best of his time, and his testimony, therefore, may be taken as conclusive.

In former years I myself fished for pike with many of our best spinners on the Thames, amateur and professional, from the late Tom Rosewell downwards, and I can unhesitatingly endorse the fifty per cent. estimate for losses after striking. Indeed, I should say the estimate erred on the score rather of moderation than of excess. In the case of indifferent spinners, the average of losses would doubtless be considerably greater. It has been already shown that with my tackle the losses after striking have been found to be enormously less, being calculated by several independent authorities as not exceeding one in six, or a little over sixteen per cent. in lieu of fifty. Taking them, however, at say even twenty-five *per cent.*, the difference still represents one-fourth of the total catch.

I should think this was a fair average of the losses for a fair average of days, but every spinner knows that there are occasions when pike seem hopelessly off the feed and will only take the bait between their lips just by way of playing with it as it were. On such occasions it is very difficult to say what the percentage of losses after striking might, or rather might not be.

When fishing last year at Leeds Castle with my friend, Mr. Wykeham-Martin, I had an experience of this sort which I shall not forget in a hurry. The water was thick after a flood of, in that part of the country, almost unprecedented dimensions, and this, no doubt, put the fish—with which these beautiful waters are plentifully stocked—off their feed. They merely toyed with and teazed the bait; nibbled it, flipped at it with their tails for aught I know, did everything, in fact, except attempt to swallow it; and the result was a proportion of misses to kills, the figures of which I cannot give because, unfortunately (or fortunately?) I did not keep them, but it was something portentous. What it might have been with the unexpurgated tackle can only be conjectured. Very likely the couple or brace or so I did eventually succeed in bagging would have been represented by a 'duck's egg!'

No doubt, the great size and thickness in the wire of the

hooks used in these old fashioned spinning flights, contributed much to the heavy percentage of losses.

The shape or bend of the hooks is also a very critical point as regards the killing powers of any flight. The difference in the killing power between a triangle of Limerick hooks and one of my pattern, or even of the 'Sneck' bend is not less, perhaps, than one hundred per cent. against the first named. Round bends and Kendal bends stand about midway in penetration; the differences in each case being caused, to a great extent, by the different angles at which the points of the different hooks meet the skin of the fish's mouth when the line is pulled tight.

The following table shows the results of experiments I have tried with four hooks, selected at random from the stock of a London fishing-tackle maker (they were all No. 2's of his sizes) :—

Bend of hook.	Average pressure required to penetrate over barb.
Limerick	3 lbs.
Round	2½ lbs.
Kendal	2¼ lbs.
Sneck	1½ lbs.

Now, suppose that only *one* triangle is used (as in my No. 1 Flight), of the same size as that above, and of the 'Sneck' bend, and that no other hook on the flight touches the fish. Well, it is probable, we may assume, that two of the hooks of this triangle will be in contact with the pike's mouth ; therefore a stroke equal to three pounds pressure at the very least will be required to fix these two hooks over the barb, and that without taking into account the resistance offered by the holding of the bait itself between the fish's jaws. Have any of my readers ever tried what the pressure actually exerted by an ordinary stroke with a jack-rod is at, say, twenty-five yards? If not let me suggest a slight experiment which will assist them, perhaps, in future in judging what the force really exerted by ordinary striking is :—

Take a three-pound weight, and adding another pound to

represent the loss of power caused by the obstruction of the water, and two more to allow for the pressure of the pike's teeth on the bait itself (six pounds in all), attach the end of your trolling-line to it, and using an averagely stiff jack-rod, see how much striking force is required to be exerted in order to move the weight smartly—say, four inches—at twenty-five yards distance. If the bait be very heavy, or larger-sized hooks be used or more of them, or of a less penetrating 'bend,' a little calculation on the foregoing basis will easily enable the spinner to adjust the weight used in the experiment so as to represent the average pressure or force required for an efficient stroke.

It is, therefore, strongly recommended to all spinners, as the very alpha of their craft, and notwithstanding the opinions to the contrary expressed by many angling authorities, *to strike*,—and that the moment they feel a run. All other rules, such as 'giving the fish time to turn,' 'waiting till he shakes the bait,' &c. &c., are useless, and, indeed, generally impossible in practice. Again, the pike, with many other predacious species, shows a great reluctance to let go a prey once seized. Most of us have probably witnessed this pertinacity in the case of both eels and perch; and the stickleback, as is well known, will let itself be pulled out of the water by its hold of a worm. On one occasion, for the sake of experiment, I fastened a large cork to a string, and drew it across a pike pond, giving it at the same time an irregular, life-like motion. It was quickly seized by a fish of about two pounds, which made a most determined resistance, running out the twine as if really hooked, and only relinquishing its grasp of the cork when within arm's length. The experiment was repeated several times with a similar result.

Therefore, I say once more,—Strike, and strike hard; and *repeat the stroke until a violent tearing struggle is felt*; such a struggle almost invariably beginning the moment a fish really feels the hook, and being easily distinguished from the sluggish resistance, sometimes absolute inaction, experienced when he is only 'holding on.' It is generally large unwieldy pike which

act in this fashion, and an attention to the above suggestion will not unfrequently save the loss of the best fish of the day.

Always strike *down stream* when feasible, and, when fishing in still water, *in the opposite direction to that in which the fish is moving*; the hooks will thus be brought into connection with his jaws and the soft parts at the corners of the mouth, instead of being pulled, as it were, away from him. In the majority of instances, however, neither time nor circumstances admit of these rules being adopted, and in such cases the simplest and safest plan is to strike straight upwards, the spinner being always prepared for shortening the line the moment the stroke is made in case the fish should make a rush towards him.

In regard to playing pike after being hooked, the golden rule is, first, to keep a steady and even strain upon them without intermission; secondly, to get them into the basket with as little delay as may be.

The maintaining of a sufficiently heavy strain is particularly necessary in pike-fishing, where stiff rods are used, and flights containing several hooks, as the sudden slackening of a foot or two of line is sufficient to restore such a rod to the straight position from which it has been comparatively little bent, thus removing the strain altogether; whilst the tendency of using a good many hooks on the same bait is, of course, to lessen the pull on each particular hook.

Even with a 'swishy' salmon or trout rod it is always desirable to keep up a certain steady strain on a fish, although in this case a slackening of at least two or three feet of line must occur to restore the rod to its straight position, and remove the pressure from the hook; whilst the fact of the hook being single diminishes the probability of its becoming unfixed, and increases the chance of its tearing out of its hold.

Should a fish run under or into weeds, there is but one plan to be pursued—tighten the strain upon him to the very utmost that rod and line will bear; by this means the line will frequently act as a knife and cut its way, with the fish, through all obstacles. But whether the expedient fails or succeeds, it is the

only one that can be adopted; if once the fish passes under the weeds without the line cutting through, the latter forms an angle at the point where it strikes the obstacle, and all power over the fish is instantly lost. Not one large fish in twenty will be brought to basket under such circumstances.

LANDING.

For landing a pike with the gaff I have already given what hints occur to me at page 33. If neither landing net nor gaff is accessible the best plan is to grasp the fish as tightly as possible just behind the head and either lift or jerk him on to the bank.

In regard to the landing of pike, as on most other matters piscatorial, there are, of course, many varieties of opinion. One warning I would give, however, do not follow Nobbes' suggestion to land him by 'putting your fingers in his eyes,' nor by his gills, though we have the authority of the father of trolling for the fact that 'some will adventure to take him thereby,' although, as he quaintly observes, 'the hold is neither so secure nor so safe for the fisher, because the fish in the heat of passion may accidentally take revenge upon his adversary by letting him blood in the fingers, which way of phlebotomy is not esteemed so good.' Probably no very elaborate argument is required to recommend this latter remark to the judgment of pike-fishers.

Of late years I never go out pike-fishing without a gaff, but in former years I disdained the use of anything longer or stronger than my own fingers, and it is curious how seldom I lost a fish in consequence. On one of the few occasions on which I hooked so large a pike (23 lbs.) that I could not manage him myself, the late Mr. Frank Buckland was luckily close at hand, and wading heroically into the water carried the fish out in his arms.

I once performed a similar operation for the benefit of a pike my wife had hooked below the Flax Mills at Fordingbridge. This troublesome individual weighed only 9 lbs. or 10 lbs.

but then there was a lady in the case which makes all the difference.

To come back to pike-spinning. I have often been asked when is the proper time or when are the proper occasions for using the spinning bait; my answer has been 'always,' except when the water is so full of mud and weeds as to be 'impossible.' Such advice is, however, seldom really required as men who have once taken to spinning rarely care very much for any other method of pike-fishing. Moreover the spinning-bait is, with the exceptions above indicated, always killing from June to the end of February—that is during the whole season when pike can be taken. When, however, the water is much discoloured by a flood, a live bait, such as a roach or dace, or anything that looks large and bright, is the best and, indeed, practically the only chance. When a river or lake is so much overgrown by weeds as to make either the live-bait or spinning-bait impracticable, the gorge-bait should be substituted, and only on such occasions should I personally ever resort to it.

What is the best weather for spinning? I must confess my inability to answer this question. I doubt if there is any rule as to the state of wind and weather by which the most experienced pike-fisher can really prognosticate what will be a good day for spinning, and what for live-bait or trolling, or even whether the day will prove good for pike-fishing at all. I have been led to this opinion by a careful observation of the condition of weather and water existing on days on which I have had the best and the worst sport, and I cannot say that I have ever been able to make out that there was any rule or system whatever traceable in the result. In this I am confirmed by Captain Warrington, of Sandhill House, Fordingbridge, a most experienced pike-fisher, who assured me that he had kept an exact register of the state of the wind, water, barometer, &c., on the days when he had been jack-fishing *for a great many years*, and had not been able to arrive at any result whatever,—the results, in fact, were altogether contradictory and unintelligible.

Many plausible rules on these subjects have, however, been laid down by other authors. Nobbes recommends to fish in the morning and evening in hot weather, and all day long in cloudy weather, and pleasantly remarks that 'it's the wind and the cooler clouds when Zephirus curls the waves with a brisk and delightsome gale that invites a fish to repast.' This quaint author says, 'A northern wind indeed is sharp and piercing, and will weary the fisherman's patience, because Boreas his breath is more nipping than that of his fellows, and the north-east carries a proverb with it enough to discourage a fresh-water shark.'

Another author favours the sharp breeze that sweeps the half-frozen dyke—

> And hungers into madness every plunging pike.

Whilst the majority are of opinion that—

> When the wind is in the south,
> It blows the bait into the fish's mouth,

and pronounce that *Eurus* is neither good for man or beast.

Stoddart, writing principally with regard to Scotch waters, says :—

> As to the weather and state of water best suited to pike-fishing, the former I esteem the most when dull and warm; there being at the time a breeze from the south or south-west. Sunny glimpses, now and then, are not unpardonable, and the approach of thunder, so inimical to the hopes of the trout-fisher, may be held auspicious. On cold days, however windy, pike seldom bite well, although in Teviot, during the spring season, I have met with exceptions. In this river also I have noticed that these fish are in high humour for taking immediately before a flood, and when the water is just beginning to swell. This is owing no doubt to the anticipations entertained by them, through instinct, on being deprived for some length of time of their usual food, which, during a thick muddy water they are unable to discern and secure. They moreover bite freely when the river is of a deep-brown colour, and I have caught them in pools highly impregnated with snow; in fact, there is no state of water, actual flood excepted, during which the river pike I allude to (Scotch) may not be induced to take.

Baily says :—

Never go pike-fishing when it freezes sharp. . . . Although some anglers say that pike will bite well in such a state of weather, I can assure you they are very much mistaken. In January and February, when the weather is open and a little sunshiny, and the water clear, with a gentle breeze blowing, pike will bite well. A calm still day is bad for pike-fishing at any time of the year, but particularly in summer when the weather is hot, but they may be taken on such days in the morning and evening. A good rough wind will keep them alive in the roughest weather. As a general rule, however, you can take great store of pike in spring, summer, autumn, and winter, if the water is clear and rippled by a gentle breeze and the day cloudy.

Probably the real truth is that a good breeze from whatever quarter it may blow is favourable for jack-fishing, and particularly for spinning, whilst with regard to water the only rule which can be considered to have any general significance is that a full fresh stream is usually preferable to a water that is low and bright.

As regards the *depth at which the spinning-bait should be worked*, that depends entirely upon the state of the water with reference to weeds and other circumstances. It will be generally found, however, that in hot weather the fish lie near the surface, and in cold weather near the bottom, so that the bait should be spun 'shallow' or 'deep' accordingly.

In 'leading' the trace for the purpose of regulating the depth, it should always be borne in mind that to sink a large bait to a given depth requires a heavier lead than is necessary in sinking a smaller bait. Thus, if a half-ounce lead will sink an ounce bait to the depth of one foot, a lead of an ounce in weight would be required to sink a two-ounce bait to the same point. This is owing to the fact of the bait being as nearly as may be *of the same weight as the water*. It has been proved that in ordinary river water a fresh killed fish of 19 lbs. weighed 1¼ lbs. only. The tendency of the bait being to remain on the surface of the water where it is thrown, it is obvious that the larger the bait the heavier must be the weight to carry it down to the same

place in a given time. Moreover, the larger the bait (or, in other words, the greater its *vis inertiæ*) the greater inclination has the line when pulled upwards from the top of the rod to lift the sinking lead to the level of the bait. Thus, there is a compound resistance to be overcome in weighting a large bait to sink deeply.

PIKE-HAUNTS.

The haunts of pike vary considerably at different times of the year, and vary also with the nature of the particular waters, but it usually prefers a medium depth of water plentifully supplied with weeds and flags, selecting, if possible, a gravelly or sandy bottom.

The neighbourhood of reeds, docks, bulrushes, and the broad-leaved water-lily are its favourite resorts, and of these a flooring of lilies, with from three to five feet of current over it, and a wall of reeds at the side, springing from the bottom, is the best. Indeed, it may be said that the reed and the lily are to the pike what the hollybush is to the woodcock. In lochs and meres the most shoal and weedy parts, small inlets, and little bays, or the mouths of streams, where minnows or other fry congregate are generally the best spinning grounds; and in rivers, back waters and dam heads, eddies between two streams, or, in fact, any water that is weedy, of moderate depth, and not too much acted upon by the current.

As a general rule, pike will be found during the summer in or close upon the streams, and in winter, after the first heavy flood, in the large eddies and deeps.

LIVE-BAITING.

TACKLE AND HOOKS.

LIVE baiting, or live bait fishing, divides itself for all practical purposes into two categories—the first, which may be called snap live-baiting, where the fish is struck immediately, and the second, which, but for the confusion of terms, might be called live-gorge-baiting, where the fish is allowed to pouch or gorge before striking. In both cases leads of some sort are used to keep the baits down, and (although not always) floats to keep them up ; as also to indicate the 'runs.'

There are two methods of using the snap live-bait ordinarily practised, one with a float, and the other with what is called a 'paternoster.' To deal first with float-fishing :—There is little difference between this and ordinary float-fishing, except in the strength of the tackle and size of the float used, the object being, of course, to prevent the bait, which is often ¼ lb. or even ½ lb. weight or more, from pulling it under water. The hooks used are generally of gimp and a barrel-lead or bullet is run on the line to 1 ft. or 1½ ft. above the bait. Supposing the depth of water to be fished to be about 6 ft. and the bait to swim about 1½ ft. from the bottom, that would leave about 3 ft. between the lead and the float and 1½ ft. in which the bait could 'play.'

A great variety of patterns of live-bait tackle are given by various authors ; some of them tolerably good, others (and they are the majority) execrably bad—whilst a few are simply impossibilities, as no live-bait could survive their application more than a few minutes. Here is an example of the last, taken from

F. T. Salter's 'Angler's Guide and Complete Practical Treatise, &c.,' 2nd edition, temp. 1815. He calls it the 'Bead-hook':—

> The bead hook is formed of two single hooks tied back to back, or you may purchase them made of one piece of wire tied to gimp; between the lower part of the shanks is fastened a small link or two of chains, having a piece of lead of a conical form, or like a drop-bead, (from which it takes its name) linked by a staple to it. The lead is put into the live bait's mouth, which is sewed up with white thread.

This is not much unlike thrusting a kitchen poker down a man's throat and then stopping up his mouth with pitch-plaister. And yet this prodigious piece of absurdity is quoted with laudatory expressions by a whole string of authors.

A tackle that exemplifies the 'execrably bad' class is to be found in Blaine's 'Encyclopædia of Rural Sports,' one of the least trustworthy manuals, so far as fishing is concerned—sound as it may be on other subjects—that I am acquainted with, and yet one of the most quoted by modern compilers.

With hooks of the proportionate size shown in the diagram of this tackle, the chances are about three to one that no pike would ever be struck by them at all, but if he were so struck the likelihood of his being brought to basket without his cutting one or other of the two suspensory gut links (the whole tackle is to be made of single gut) would be small indeed. And yet Ephemera, in his 'Handbook of Angling' (p. 142, 3rd edition), calls this miserable abortion—I can characterise it by no milder term—'*the best*' live-bait tackle extant!

These sort of *bêtises* (for the foregoing are only specimens, if flagrant ones) which are to be found cropping up everywhere in fishing books, make us almost ready to agree with a review in a recent number of the *Fisherman's Magazine*, which affirmed that the gentle craft was afflicted with a literature as large, perhaps, as that of all other field sports put together, and of which nine-tenths would appear to have been written for the express purpose of showing how ignorant it was possible for men to be on subjects on which they nevertheless thought themselves competent to instruct others.

A really efficient live-bait snap-tackle, and one which has been extensively used for many years by pike-fishers on the Thames, was, I believe, the invention of Henry R. Francis, Esq., M.A., author of the 'Fly Fisher and his Library.'

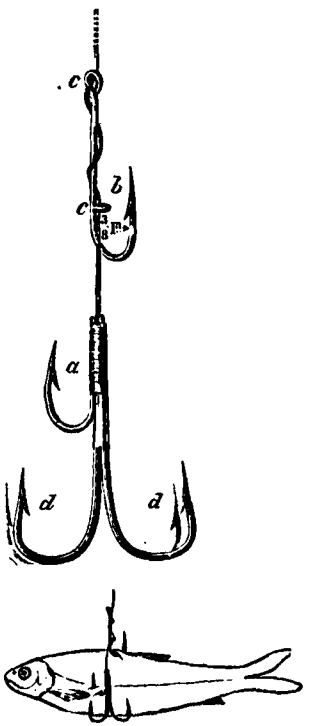
It consists first of a triangle composed of two large hooks and one small short one, whipped on to them, with a moveable lip hook above. The lip hook is put through the bait's lip (not lips, N.B.) and the small triangle hook into the back just at the insertion of the back fin. The result is a bait which, when once a pike has taken hold of it, is exceedingly good for returning the compliment; as ordinarily employed, however—that is by attaching to lip and back fin—it cannot be said to embrace all the qualifications really necessary to the ideal of a perfect snap live-bait tackle.

One great objection to it is that the bait is suspended in a most unnatural position in the water, standing, in fact, except when it rights itself by a sudden muscular exertion, upon its tail. This, of course, prevents it freely 'roving,' to use the technical expression, and its orbit of attraction is limited to a comparatively small compass. When, moreover, the bait does exert itself for a swim its first effort is naturally to carry it to the surface of the water which is contrary to the theory of live-baiting and the object of the leads.

Of the minor imperfections, it may be observed that any hooking of the lips of the live-bait is to be avoided if possible, as it interferes with the respiratory functions and necessarily tends to shorten the existence and lessen the vitality of the bait.

What is wanted is, firstly, that the hooks should be suspended in such a position as to be certain of striking when the bait lies in the pike's mouth in its normal position, i.e. crosswise; secondly, that the lips and the respiratory organs of the bait should not be interfered with, and thirdly, that the position of the bait on the hooks when in the water should be the normal one, namely, horizontal, or nearly so, and with the head pointing rather downwards than upwards, to prevent the tendency of the bait to rise to the surface.

Curiously enough the tackle I have been describing very nearly fulfils them all when its mode of attachment to the bait is changed from the lip and back either to the back and belly, or rather flank, or to the back and pectoral fin, (position shown in miniature live-bait, illustrating Mr. Jardine's tackle.) Either of these modes of fixing the hooks will have the effect of changing the position of the bait from perpendicular to horizontal, or, better, with head pointing rather downwards.

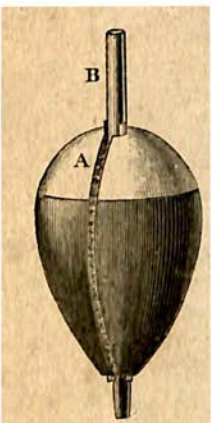


SNAP LIVE-BAIT TACKLE.

In the tackle itself, the only change is the brazing on of the small hook, *a* (*vide* cut), to the two large ones laterally instead of in the ordinary position. The adjustable back hook, which is intended to pass through the back, under, *or behind*, the insertion of the dorsal fin, *b*, can easily be moved up and down on the line in the same way that a lip hook is moved on a spinning flight, by pushing the gimp upwards or downwards through the metal loops, *c c*, and tightening the coils from the opposite end. The back hook, *b*, having been attached, the small lateral hook, *a*, is now inserted under a small strip of the outer side-skin, so as to keep the double hooks in their proper position close to the side of the bait, as shown in the miniature diagram above ; or else under the insertion of the pectoral fin as described. If the small hook were not brazed on laterally, the large double hooks, *d d*, would stand further away from the bait and would

be proportionately more unsightly and less efficient. The tackle shown is of the proper size for a dace 6¾ in. long, a very fair medium size.

A very good variation of this tackle, and one excellently well suited to large baits and long casting, is that which has been for many years very generally in use at Slapton Ley. It consists of two large triangles; the upper (and larger) one with a metal loop at the end of the shank, through which the gimp passes freely, and the lower one lapped on to the end of the trace in the ordinary way. The mode of baiting is precisely the same as that just described—and elsewhere indicated, with a diagram, by Mr. Jardine—where the insertion of the pectoral fin is the point of attachment for the lowest triangle. The difference—which is merely one of detail, not of principle—is that instead of the triangles consisting of 2 large hooks and 1 small one, the hooks in each triangle of the Slapton Ley tackle are all of the same size, and the effect of the lip hook, for shortening or lengthening the tackle, is obtained by twisting the gimp several times round the shank of the upper triangle before passing the latter through the back just behind the dorsal fin.



LIVE-BAIT FLOAT, HALF SIZE.

With this method the bait can easily be cast 30, or even 40 yards, when there is a favourable wind.

The bait should always hang slightly head downwards, which prevents its attempting constantly to swim to the surface of the water, and keeps it in its proper position without in any degree interfering with its perfect freedom of motion.

The float (half-size) represented, which is the ingenious invention of Mr. R. B. Marston, editor of the *Fishing Gazette*, has the advantage of being detached in a moment from the line through the slit, so that a larger or smaller float can be substituted

without any loss of time on a change of baits; it has been registered under the title of the 'Fishing Gazette Float.'

In order to fish very deep water, the Nottingham or 'travelling' float (figured at page 215), made sufficiently large to bear up the weight of the bait and line, may be used. With this tackle there is practically no limit to the depth that can be effectually fished.

It will be found a convenience for keeping the reel line from sinking and becoming entangled with the live bait, to 'thread' three or four pieces of cork about the size of a cherry at a distance of two feet apart. These can be put on with a baiting needle before beginning, and the elasticity of the corks will generally suffice to keep them in their positions. They have the additional advantage in that when the float disappears under the surface they indicate the direction which the fish has taken.



LEAD FOR LIVE-BAITING, AND LOOP-SWIVEL.

The trace below the running line should be divided into two parts—that above the lead, and that below. That above, say 2 ft. or 2½ ft., may be made either of stained gimp or twisted gut, or in fact of either of the materials already mentioned as suitable for spinning traces. The lead itself should be what is known as 'pipe-shape,' and it should be prevented from slipping off the trace by the latter being attached to a hook swivel, the loop of which will prevent the lead slipping over and will be found very convenient for the purpose of changing flights. The arrangement of the lead and swivel is shown in the diagram, the trace being continued upwards (2 ft. or 2½ ft.) from the point marked A, and, for the 'below lead' portion 1½ ft. of gimp with the flight being attached to the hook swivel B. A lead of the shape shown is neater, and shows less in the water than one of the bullet form, and is therefore preferable.

Both lead and float, as to its lower part, should be painted with some dark green or weed colour tint; or, failing this, varnished with Brunswick black. The upper part of the float should be painted black, as that colour shows better than any other; at twenty-five or thirty yards off in roughish water, a white or green topped float is often very difficult to see, and the fisherman is, so to speak, kept making shots at a target without any bull's eye.

The trolling rod used for spinning will also answer perfectly in every respect for live-bait fishing, using one of the shorter tops already mentioned, page 12.

In live-bait fishing with this tackle, a fish should be struck the moment a 'run' is perceived, that is, when the float goes under water or moves away with greater rush and rapidity than the bait itself could be supposed to exert. The stroke should be a sharp one as recommended in spinning, and continued until a violent tearing struggle is felt; it will frequently happen otherwise that whilst the troller thinks his pike is hooked, the latter is merely holding on to the bait at his proper pleasure.

LIVE-BAITS.

The best live-bait, according to my experience, is either a small dace or a very large gudgeon, that is, for clear waters, and except where pike run unusually large. In the latter case, or where waters are much discoloured, bigger baits with brighter scaling will be found more effective, and there are some very successful live-bait fishers in my experience who use nothing but roach.

I would impress again, however, upon the reader that with every description of pike snap-tackle, whether spinning or live-baiting, the larger the bait, the greater the chances against hooking the fish, and this is a rule to which from necessity no tackle can be excepted. Four or five ounces is about the maximum weight which can be properly used on live-bait snap-tackle with any reasonable certainty of hooking a fish. When

larger baits are necessary, and I have known several cases in which fish of half a pound and upwards were commonly used, recourse should be had to the live-bait gorge-tackle.

Where pike are over-fed or obstinately shy of the ordinary bait, it would be as well to try them with gold-fish, with which I have succeeded in catching pike under circumstances that gave me considerable faith in them. If gold-fish are not forthcoming, a small carp will also form a variety and be found a killing as well as a long-lived bait. To quote from myself—if it is permissible—'the principle which is so generally admitted in the case of men and the higher animals, holds good also in that of fish: if you want to attract them and stir their appetites, offer them a novelty—no matter what—but something that they have not been accustomed to. Thus, as a rule. were I fishing a river in which there were no "ground swimmers," I should try a gudgeon; if there were no surface swimmers, a dace or a bleak; and so on.

'How, if not upon this principle, is to be explained the indisputable fact that the "spoon," at first so deadly both for pike and trout, is now almost disused on many waters where it was originally most successful? Indeed, so convinced am I that "novelty hath charms" even for the rugged breast of the pike that I have more than once been on the point of rigging up a plated fork instead of a spoon, to try conclusions with!'

In stew ponds, where pike are kept and regularly fed, not only eels, but also frogs form a most acceptable variation of the dietary. A friend of mine, when living not far from Great Marlow, had in his gardens a stew pond which was kept well stocked with pike by supernumerary captures out of the neighbouring Thames. Some of these jack were of easily recognisable size and had their own names, to which, indeed, local tradition said that they were in the habit of responding when called. I have often watched Thomas, the tyrant undisputed of this small watery domain, and I have noticed that the observation was mutual. I have watched to see whether the state of domesticity, so to speak, would have any corresponding

effect upon his character, and whether when I threw him a frog and addressed him caressingly as 'Tommy,' the steely cold glance of his motionless eyes would soften, and possibly the corners of his grim mouth relax into a convivial smile. When I threw him the frog, the corners of his mouth did, indeed, relax, but, alas! it was only for the purpose of enclosing therein the savoury morsel. Was it a judgment upon him for his ingratitude, that my amphibious offering was very nearly proving his destruction? . . . 'Charley' was the next sized pike in the pond, and unperceived by me, was lying under the broad leaves of some water-lilies not two yards in front of the spot where the frog was thrown. The result was that both fish simultaneously rushed forward open-mouthed, and 'Charley' being rather the smaller of the two, fairly darted into the extended jaws of his *vis-à-vis*. It appeared at first likely that one or both would be choked, but eventually they managed to separate, with probably no worse effects than some scratches on one side and a few broken teeth on the other.

It would seem, however, from the following account, written by Mr. Edward H. Cooper, in the pages of *Land and Water*, that it is by no means impossible to more or less tame a pike in a stew-pond. A pike who offers his back to be 'stroked with a small stick' may be considered to have made considerable progress on the road towards domesticity.

When I was residing in Suffolk as a country clergyman, says Mr. Cooper, I became acquainted with various peculiarities displayed in the pike tribe, the relation of which, I think, may prove interesting to the readers of *Land and Water*.

Having to use water from a small pond for all domestic purposes, I procured a small pike about eight inches long, and as nearly as I could judge about nine months to a year old, certainly not more (but I have found by experience that the size of fish much depends upon the quantity of food they are able to procure, more so than upon mere age). The purpose for which I got the pike in question, was to keep the pond, which was an artificial one, free from all water defilers, as frogs, newts, lizards, and dragon fly larvæ. This he speedily did, and most rapidly increased in bulk.

About three months after the fish had been placed in the pond, it was coated over with ice, and remained so most of the winter. Consequently I lost sight of my pike until the return of the following spring, when he made his re-appearance at the surface of the water, very much thinner, it is true, but grown certainly four inches. Having cleared the pond of all kinds of beetles and other aquatic food, I had to resort to other means of keeping the fish alive. For this purpose I used to throw into the pond daily three or four frogs, which the pike greedily devoured before they had a chance of escaping.

As the summer advanced, the number of frogs were increased to eight or ten a day, all of which were most eagerly taken, as also were large worms, small ones being rejected with scorn, even if they came invitingly close to the jaws of the fish. Regularly every morning Jack would rise to the surface as soon as he saw me approaching the pond, and instantly begin to wag his tail and fins with delight, and apparent joy; he would then follow me round the pond several times in succession to receive his allowance of frogs, and even allow himself to be quietly stroked down the back with a small stick. This continued until the month of October, when the pike would be about two years old; unluckily a scarcity of frogs began to make itself apparent in my garden, so having found a ground lizard under a creeping plant, I resolved to try whether or no the pike would eat it. No sooner had I thrown the reptile into the pond, than it was seized and devoured, but with this unfortunate result: in half an hour after swallowing the land lizard, the pike became uneasy, and commenced to swim backwards and forwards as if in pain, and this continued with increasing vehemence every hour until the following day, when having completely changed his colour to a sickly ashen hue, he turned over and died.

Upon getting the pike out of the water, I found that it weighed just upon four pounds: its body was very bloated. I did not, however, examine the contents of its stomach.

According to some, there is a special antipathy between the pike and the frog, the latter fixing himself upon the pike's head and endeavouring to eat out its eyes. Dubravius, Bishop of Bohemia, is quoted by Walton as having been witness to one of these experiments in optics.

The bishop, he says, that had beheld the battle, called his

fishermian to fetch his nets, and by all means to get the pike, that they might declare what had happened; and the pike was drawn forth, and both his eyes eaten out; at which, when they began to wonder, the fisherman wished them to forbear, and assured them he was certain that pikes were often so served.

A recent writer, commenting on these alleged practices of the frog, describes how

Some four years ago, about the middle of April, while sauntering by the side of a large pond, I espied, not far off, and drifting towards me, a frog, seated on what I at first supposed to be a piece of rail. On a nearer approach I found that, instead of a piece of rail, froggie was composedly squatted on the back part of the head of a 5 lb. or 6 lb. pike. The fish leisurely swimming on the top of the water passed within three yards of the spot where I was standing. I never witnessed a similar circumstance before or since.

Further on he says :—

As to the eating of the eyes, I am rather sceptical on that point; but that frogs occasionally locate themselves on the heads of pike there can be no doubt; but the question is, what takes them there? Can it be that in spring some pike are afflicted with a fungus or parasite on their heads and backs, and that the said parasite is so appetising a morsel for the frog that he braves all dangers in order to obtain the coveted *bonne bouche*, and that the pike (at this particular season), out of gratitude, spares the frog's life?—a mutual understanding having taken place between them, after the manner of Herodotus' story of the trochilus and the crocodile, wherein he relates that 'the crocodile, when he gets out of the water on land, open his jaws, and then the trochilus enters his mouth and swallows the leeches. The crocodile is so well pleased with this service that he never hurts the little bird.

The outcome of enquiry into this subject instituted some time ago by a German paper devoted to fishing subjects, appears to be that the frogs which have been noticed on the heads of pike and, perhaps, other species, did not occupy that 'coign of vantage' for the purpose of obtaining a dinner, but rather that the explanation of the matter is to be found in the

sexual instinct so strongly developed in the frog at certain seasons of the year.

My attempts to fascinate my friend's large pike remind me of what once happened to Lady Barrow, at that time better known as the beautiful Miss Croker, who fancied that by the dominant power of the human eye, and doubtless of her own *beaux yeux* in particular, she would fascinate a grisly old African lion, *à la* Van Amburgh. The experiment appeared to be proceeding successfully, when suddenly the object of it sprang up, and with a mighty roar dashed himself furiously against the bars of the cage. The effect was electrical. Most of the spectators took to their heels, while the beautiful operator herself fell back fainting into the arms of one of the party—I believe the Duke of Wellington—who was, of course, accustomed to being 'lionised.'

The quantity of food a pike will consume in a stew-pond, and his consequent growth rate are points upon which opinions and experiences differ widely, and to procure positive data upon must clearly be a matter of great difficulty.

One writer mentions that eight pike, of about five pounds each, consumed nearly 800 gudgeons in three weeks, and that the appetite of one of them was almost insatiable. There is no doubt, however, that this dietary is far below the limit which might be reached. Mr. Stoddart, in his 'Angler's Companion' (p. 298), makes a curious calculation of the ravages committed by pike in the Teviot, and also states that in some lochs in Scotland the fish has been known to eat its own weight of baits every day.

From frequent opportunities of watching the feeding and management of pike in stews, I should say that a fish of five or six pounds would eat, if permitted, at least twice its own weight of fish every week; whilst, on the other hand, it can be almost starved for a very considerable period without suffering perceptibly; and in one instance already alluded to, namely, that of the pike in the Zoological Gardens, the increase of weight has only been 1½ lbs. in ten years. This capacity of

existing under such opposite extremes of diet throws an additional difficulty in the way of drawing, from the growth rate in stews (where only it can be conveniently tested), a correct deduction as regards that in ordinary waters, as we are deprived of the means of gauging the amount of food really required.

Of one point, however, I have fully satisfied myself, viz. that during the first year the maximum growth, in open water, does not much exceed half a pound. The grounds for this conclusion are briefly as follows:—Pike spawn in March or April; in June, when pike-fishing properly commences, I have not unfrequently taken, and seen taken, with the net, small jack of about *an ounce*, or a little more, in weight; in September, again, I have, with a minnow, constantly taken them of *three or four ounces*; and in January and February specimens of from *five to seven ounces*; whilst I have never, within my memory, caught the smaller sized fish at the later periods, or *vice versâ*, thus pointing closely to the inference that at these seasons there were young jack of these respective sizes, and *none others*—in other words, that the different sizes represented the different stages of growth. These I believe to be the fish of about ¾ lb. of the following season.

With regard, however, to the growth rate of pike in open waters doctors again differ, and it has been by various authors estimated variously at from 1 lb. to 5 lbs. a year. My own experience as to pike growth—I am not now speaking of the growth during the first year—leads me to believe that the above wide divergency of opinion is very likely not so far from being justified by facts as might be supposed, and that the growth rate of pike in open waters is susceptible of very great variation, depending upon the nature of the water and other circumstances, but principally upon the amount of food supplied to them.

The following correspondence took place on this subject in the *Field* some years ago, and as the experience of the writers is personal and apparently trustworthy, the letters may probably be of interest:

GROWTH OF PIKE.

I think it possible that 'J. B. H.' (who asked a question about the growth of pike last week) may be glad of the little information which I can give (the result of my experience). A few years ago I stocked a piece of water five acres in extent with pike. The piece of water is near Lymington, the property of my brother, I can positively state that there were no pike in the water when I stocked it.

I put in some pike, all of them under 1 lb. each in weight, in the early autumn. Exactly three years afterwards, in the early autumn, I caught two pike in that piece of water, each weighing 12 lbs. I am sorry that I cannot commence calculating the increase of weight from March, after the spawning season. In this piece of water, therefore, the pike increased in weight nearly 4 lbs. a year. The piece of water is well stocked with roach and other small fish, and has a gravelly bottom generally.—SIDNEY BURRARD (The Mount, Isle of Wight, Dec. 10).

In June, 1855, Richard Briscoe, Esq., whilst fishing in Melbourne Pool, Derbyshire, caught a pike which weighed 20 lbs. This fact is interesting as being one step towards solving the question of the progressive growth of pike. The pool was emptied of water and cleaned out, and stocked with pike and other fish on Dec. 16, 1847, so that this pike had grown to that weight in rather more than eight years and five months. This pike was 3 ft. 3 in. long and 18 in. in girth round the shoulders. His head was small in proportion, his body in prime condition, beautifully marked, bright and symmetrical in shape, and the fish was evidently in the prime of life.

I once saw a pike on August 26, which was in good condition, but a very old fish; and although it measured 3 in. longer than the one just described, and about the same in girth, it only weighed 16 lbs., or 4 lbs. lighter. This fish had lost some of its teeth, and had the most ferocious shark-like head I ever saw in a pike.

It is generally supposed that pike grow more rapidly in Melbourne Pool than the Trent. Mr. Kinsey, of Melbourne, put a pike into a well when a few inches long; food was given to it for several years, but it grew very slowly, and at last reached 3 lbs. It lived fourteen years, and latterly became very tame—so much so as to take food from the hand. If a worm were tied to a string and put

into the water, it would seize it with great avidity, and rather than loose its hold allow itself to be lifted out of the water. By constant teasing in this manner it became very shy, and upon anyone approaching the well, dived to the bottom and secreted itself. In order to prevent it being annoyed the owner put a haystack over the mouth of the well, so that during one whole summer it lived in total darkness.—JOHN JOSEPH BRIGGS (King's Newton, Derby).

My experience is not exactly in the form 'J. B. H.' wishes, though possibly what I can state of my own knowledge may be acceptable.

I placed in a mill-pond of about two acres, fed by a strong stream, the finny denizens of which consisted entirely of carp, roach, and perch, a small jack (secured with a wire about six inches long). It was a female; and once in each of the three following years, and about the same period, I caught and weighed her. She increased in each year exactly 4 lbs. I then turned in another, which proved a male. The pair bred for three seasons; and in walking round the water on any day in summer, I could see the produce of those years (I once witnessed the operation of spawning) basking. The first did not exceed 1½ lb., the second ½ lb., and the third not 3 oz. The little fish would then be two and a half years, one and a half years, and half a year old, or thereabout. I added other larger fish, which I have reason to believe made equally rapid growth as their parent fish, and I attribute it solely to a change of water.

It is commonly thought that pike take their prey by a stealthy rush. It may generally be thus; but I have in more than one instance seen a most exciting chase. One especially rises to my mind in this very water. A fish of about 4 lbs. had separated a large roach from the shoal, and followed his prey as persistently, turn for turn, as a greyhound would a hare. The fish were in sight for probably two minutes, in shallow water, and neither seemed to gain or lose an inch. Both were completely exhausted. What the result was I never knew, as eventually they got into deep water, to my great disappointment. Occasionally Master Jack would try to check the course of Miss Silverside, by (I have no better term) sucking in water, and discharging it through the gills. This had momentary effect; but he 'took nothing by the motion,' as the operation told on his own speed. On another occasion the fish succeeded in taking his prey, commonly the result, I believe.—GLAN NANT.

I extract the following from the published works of the authors mentioned :—

Nobbes says :—

One pike of 40 inches might haply be of as many years standing; not that a pike grows just about an inch a year, for that is a thing that is hard to determine ; some grow faster, some slower, according to the diversity of their water and their feed. River fish are thought to grow much faster than pond fish, except the pond be very large and have a good stream run through it ; for there is nothing helps so much to the feeding of pike as fresh water. *Jacks* or *pickerels* grow faster than great ones, and I have observed in a clear and springing brook that a jack spawned in March will take a bait in October following, and will be increased to 18 inches the next March (?). In standing water, as *moats* and *ponds*, he grows nothing so fast ; for to try the experiment I have taken one out with a cast-net in May, measured him and marked him on his tail, and about Michaelmas I have taken the same fish, and he hath not increased in length above 2 inches, and very little in breadth. A river fish will grow very fast until he come to be 24 or near 30 inches, then he stands a little more at a stay, and spreads himself in thickness ; after that he will grow a long time, and be much longer growing to his full bigness from 30 inches than he was increasing to that proportion.

The following is 'Ephemera's' opinion :—

Young pike grow rapidly, and it is said by the end of the first year attain a weight of 2 lbs. I doubt it, and am persuaded that pike do not each add every year a pound to its weight. They may do so for a few years, but the time comes when their growth is stationary (!), size varying according to their good and bad condition, which is regulated by food and the seasons of the year. (From Yarrell):—'Block says the young reach the length of 8 to 10 inches the first year; 12 to 14 inches the second ; 18 to 20 inches the third ; and there are proofs on record that from this last size, pike, if well supplied with food, will grow at the rate of 4 lbs. a year for six or seven successive years. Rapid growth requires to be sustained by a proportionate quantity of food.'

'Piscator' ('Practical Angler,' p. 240) has the following :—

The pike is a rapid-growing fish, though his increase in bulk

will depend in a great measure on the supply he can obtain. Instances have occurred of their growing at the rate of 4 lbs. a-year for several years, in proof of which Mr. Jesse states that he saw three pikes taken out of a pond in Staffordshire belonging to Sir S. C. Jervoise, two of which weighed 36 lbs.

'The pond was fished every seven years; so that supposing store pike of 6 or 7 lbs. were left in, the growth of the pike in question must have been at least to the extent above stated. Still I apprehend that it can only be under very favourable circumstances that such a rapid increase in growth will take place; and from the result of my own observations in the different waters I have fished, I am inclined to think that an annual increase of about 2 lbs. is nearer the usual average; and in small hungry waters I am certain the growth is much less, . . . whilst Griffiths states that in its first year it is often 11 or 12 inches long; in the sixth has been known to measure 6 feet, and in the twelfth about 7 or 8 feet, . . . very probably, also, as is known to be the case with tench and carp (and the same is also believed with respect to trout), the progeny are inclined to grow large or small in proportion to the parent stock from which the race is propagated. 'The growth of pike,' says Dr. Badham, 'under favourable circumstances, during the earlier portion of life is occasionally at the rate of 4 lbs. per annum; after twelve years he diminishes probably to 1 or 2 lbs., and lessens still more as age advances.'

Bowlker says :—

The young are supposed to be of very quick growth, the first year it arrives at the length of from 6 to 10 inches; the second 12 to 15; and the third from 18 to 20 inches.

According to Hofland, 'if well supplied with food and suitable water, they will increase in weight from 3 to 4 lbs. annually;' and Stoddart states that he ascertained pretty accurately that the average weight of a two-year-old Teviot fish runs from 2 to 5 lbs. (a tolerably wide margin!)

The following is an extract from a letter which I received from Dr. Genzik :—

In Moravia this year a cousin of mine found in one of his carp ponds where always small pikes are put in, and is fished regularly every three years, a pike in splendid condition of 44 lbs. Austrian.

The pond is always drawn and gets nearly dry for at least ten days before it is again filled and fresh stocked. How many times this jack escaped the nets of the wading men I have no idea; but the Verwaller (bailiff) of the estate assured me that just eighteen years ago this tank or pond lay quite dry for the whole winter and spring till harvest and they made hay on the dry ground, afterwards it was filled and stocked again.

At whatever rate, however, the pike grows, whether rapidly or slowly, the one point beyond dispute is that he does grow, and that to a size which, when he is suffered to attain to his full development, would probably astonish this sceptical age of anglers, who will scarcely believe even in Mr. Alfred Jardine's twenty- and thirty-pounders, although produced in evidence, both cast and stuffed at the Fisheries' Exhibition. So far as this species is concerned, the exhibition of casts of fish by Mr. Jardine and others, few as they were numerically, sounded, I believe, the death knell of taxidermy.

In all that constitutes the perfection of simulation or the art of making the unreal appear as the real, casting is immeasurably ahead of fish-stuffing. You have, in fact, the exact representation of the fish, scale for scale, as he appeared fresh out of the water, in full length and unshrunken proportions. With a stuffed fish, on the contrary, neither his length nor his girth is ever really accurate. Fish vertebræ are separated by a sort of gelatinous substance, forming a separation between the several joints, which, after a short time, becomes desiccated or dried up, thus contracting the several bones and shortening not inconsiderably, the total length. A similar shrinking process, though from somewhat different causes, takes place in the girth. The colouring also in the cast is that of the fish just after his decease—

> Before decay's effacing fingers
> Have swept the lines where beauty lingers.

And last, not least, the fish-casting is practically indestructible by time, and does not cause the disagreeable smell produced by the old mummified specimens of the art of the

taxidermist, no matter how scientifically tittivated in the ordinary manner. Besides Mr. Jardine's [1] pike aforesaid,—alone worth going to the Exhibition to see—there was in the same gallery a very beautiful cast of a grayling of about 2 lbs. weight, which was a model of fish-loveliness, and seemed to do everything but swim. I am very sorry that I have forgotten the names of the artists by whom these casts were made, so that I am not able to associate their names with their exhibits.

To return. There is, as I was observing, a civil sort of disbelief amongst modern writers and their readers as to the accounts of very large pike, although these are handed down to us in many cases by witnesses in every way credible. The prevailing impression appears to be that a weight of 30 lbs., or at the utmost 40 lbs., is about the real maximum of weight attained by this fish.

I could easily refer, however, to many attested examples of pike having been taken in the British Islands up to the weight of 70, 80, or even 90 lbs.; but a single instance, too well authenticated to admit of doubt, will suffice. I refer to the case of the Kenmure Pike—mentioned also by Daniel in his 'Rural Sports,' and by Dr. Grierson and other authors—the weight of which was 72 lbs. It was taken in Loch Ken, Galloway, a sheet of water belonging to Kenmure Castle, *where the head of the fish is still preserved*, and may be seen by anyone sufficiently curious or sceptical to desire ocular demonstration.

To the Hon. Mrs. Bellamy Gordon, of Kenmure Castle, my best acknowledgments are due for an interesting account, written on the spot, of this gigantic pike and its capture, as well as for a photograph of the head of the fish, as it now appears, with its proportions. These latter would be scarcely intelligible without the assistance of the photograph; but, to give a general idea of the size of the fish, I may quote one measurement—

[1] The fish casts exhibited by Mr. Jardine were, I understand, executed by my friend, the late Mr. Frank Buckland, and painted by Rolfe.

that across the back of the head, the width of which was *nine inches.*

Of this pike, Stoddart says that it is the largest known to have been captured in Scotland with the rod and fly. Colonel Thornton, however, in his 'Sporting Tour,' refers to one taken from an insignificant sheet of water on Lochaber, of the extraordinary weight of 146 lbs., and in Loch Alvie, which is not far distant, he himself caught one that measured 5 ft. 4 in. in length, and which weighed 48 lbs. This fish Colonel Thornton states he caught with a gorge-hook; but Hofland has this note on the subject:—'The gallant Colonel has been celebrated for the use of the long bow, and I have heard it stoutly asserted on the other side of Tweed, that the fish was taken with a Trimmer!' Again, as to the measurements, 'Piscator' ('Practical Angler') gives the length at 4 ft. 1 in. from eye to fork, extreme length 4 ft. 9 in., instead of 5 ft. 4 in. as stated by its captor; and even in the question of the *locus in quo*, as to which one would suppose that he could not be mistaken, the Colonel's accuracy has been grossly impugned, for Daniel asserts positively that the water in which the fish was captured was not Loch Alvie, but Loch Paterliche!

> Well hast thou said, Athene's wisest son,
> All that we know is—nothing can be known.

The attempt to delineate a great fish, or the taking of him, must certainly exercise some mystifying influence upon the piscatorial mind, for we find even Stoddart, generally so accurate, when alluding to the celebrated Kenmure pike, going out of his way to describe him as having been taken with the *fly*, whereas, from the account which I have in my possession, written on the spot by the desire of Mrs. Bellamy Gordon, it is clear that he was captured by the spinning-bait. Sir John Hawkins in his notes to the 'Complete Angler' mentions the case of a pike taken in 1765 in a pool at Lillishall Lime Works, which weighed 170 lbs., and had to be drawn out by several men with a stout rope fastened round the gills.

In the Ashmolean Museum, Oxford, the head of a pike is stated to have been preserved, the owner of which turned the scale at 70 lbs.; but the curator of the museum informs me that this head is not now in the collection.

The capture of a pike weighing 96 lbs. in Broadwood Lake, near Killaloe, is chronicled by the author of the 'Angler in Ireland,' by Mr. Robert Blakey, and by 'Ephemera' in his 'Notes to Walton's 'Angler' (1853). Each of these authors, however, introducing just sufficient variations in the weight of the fish and other accessories as to impart an agreeable air of novelty to his account. The first historian of this Irish pike was, so far as I can make out, 'Piscator,' author of the 'Practical Angler,' who gives the additional particulars that 'when carried across the oar by two gentlemen, neither of whom was short, the head and tail actually touched the ground,' so that the length of this pike (putting the men only at 5 ft. 6 in., and allowing nothing for the curve of the fish over the oar) must have been close upon 10 feet. But then perhaps they were Irish feet?

A pike of 90 lbs., however, was stated a year or two ago in the *Field* to have been actually killed at that time in the Shannon; and Patrick Hearns of Ballina read in a local paper that 'a monster pike has been found dead on one of the Ballina Lakes. He was driven ashore by the great storm; he was above 60 lbs.'

From Lake Constance we read of one of 130 lbs. :—

It may interest some of your readers that on May 22 last a monster pike of 60 kilos (about 130 lbs. English) was caught by net in the Lake of Constance by two fishermen named Adlermeister and Obermann. The fish was bought for 100 fr. by Mr. Stenermeister, of the Wienerhof Hotel, at Kard, and when cut open a full-grown wild duck was found inside. My information is from the daily St. Gall paper of May 26, which I enclose.—JOHN KNECHTLY, 6 Carey Lane, London, E.C., June 4, 1877.

In crossing the ocean we should naturally expect something big' from our Transatlantic kinsmen, and accordingly in the

'American Angler's Guide' we find that 'in a pool near Newport a pike was captured weighing 170 lbs.'—not a bad 'take' that, even for a Yankee troller.

Not long ago I received from the late Dr. Genzik of Lintz, who kindly furnished me with much interesting information concerning the Continental pike, some facts in regard to the size attained by these fish in Bavaria, the Tyrol, &c., which may probably be new to many of my readers.[1] He assures me that, in the fish-markets of Vienna, Linfz, and Munich, pike are not unfrequently exposed for sale of 80 lbs. and 90 lbs. weight and upwards,[1] that at Obernenkirchen he himself saw a pike taken out of a large tank or preserve, which, after being cleaned, weighed 97 lbs. and some ounces; and that an officer of Tyrolese Rifles informed him that whilst at Bregentz during the autumn of 1862 he was present when a pike was caught weighing upwards of 145 lbs.

Dr. Genzik also testifies in a letter written to me some time ago that once when crossing the Gmunden Lake, he himself, in company with Mr. Hepburn, captain of the steamer, saw, not thirty yards from the boat, a pike jump high up into the air three times running; he was 'surely 18 ft. long.' It was close enough for him to see distinctly the 'large ribbons' on his sides.

The age attainable by pike is another debated point, and as I don't anticipate attaining to centenarian honours it is not likely that I shall be personally in a position to corroborate or contradict the statements of the orthodox on the subject.

> Your pitcher shall break on the musty shelf,
> And mine by the dazzling stream,

as poor Gordon, of bright, but short-lived, Australian fame,

[1] The fishermen on the Danube, near Strudel and Wirbel, have legends of pike 15 and 29 feet long, which break through all their nets; and at Traunkirchen, on the Gmunden Water, there are still living some fishermen, who declare that about twenty years ago, when dragging the lake, they enclosed a pike longer than either of their boats, and that they began, as they expressed it, 'to say their prayers,' thinking the enemy was on their nets; the pike, however, with one spring, jumped over the nearest boat and escaped.

writes in one of his spirited ballads. Pennant, whose respectability no one will presume to question, refers to a pike of ninety years old. Pliny considered it as the longest lived, and likely to reach the greatest age of any fresh-water fish; whilst Sir Francis Bacon, agreeing in this view, limits its probable maximum to forty years. Sir Roger L'Estrange has even gone to the length of complaining of this 'pike longevity,' which, as he quaintly observes, 'is a pity, he being an absolute tyrant of the fresh water as the salmon is the king thereof.'

Dr. Badham chronicles the age of one 'historic pike,' in the College-pond at Cambridge:—

Almost every piece of water, says he, maintains some such traditionary patriarch. Not long ago one of these hale old water-foxes was to be seen in a parallelogram college-pond at Cambridge, who still continued to champ the green duckweed with a smack, and to flounder heavily amongst the green water-lilies, on his veteran flank as he used to do in our pupilary days some twenty years back. He has seen out many a generation of bed-makers and ten-year men. The lodge has had many a new caput, and the kitchen many a new cook, since he first swam there; yet amidst all these culinary changes, no mæson has been permitted to lay fraudulent hands upon him; his safety is supposed to be identified with the interests of the college; and thus protected by common consent from hook and every harm, want has from generation to generation been carefully met by his trusty nomenclator, a whistling gyp. A note adds: 'Since putting the above into type, we have learned with regret that burglarious hands have carried off an *historic pike* from the fellows' pond of the same college. May some *ex ossibus ultor* from his ribs, stick in that fellow's throat for his crime!'

The famous story of the pike with the brass ring round its neck that was put into the Kaiserwag Lake by one of the German emperors, and there lived to the age of 267 years, is probably familiar to us all, as it has been a staple commodity with the book writers and book makers of every generation since the sixteenth century. I think I put the coping stone to the edifice which fact and fiction have conspired to rear on this foundation by producing from the old black-letter

volume of Conrad Gesner, an actual facsimile of the ring. But (I am thankful to say) these things are all written in the 'Book of the Pike,' to which I refer any of my readers who are curious on the subject. That in olden times it was the custom in some countries to put rings into the gills and round the necks of fishes there is no reason to doubt.[1]

As late as 1610 a pike was taken in the Meuse bearing a copper ring, on which was engraved the name of the city of Stavern and the date 1448. Even now the practice is not entirely extinct. Sacred fish are still to be found in different parts of the world. Sir J. Chardin saw, in his travels in the East, fish confined in the court of a mosque, with rings of gold and silver through their muzzles—not for ornament, but, as he was informed, in token of their being consecrated to some Oriental Deity, whose votaries, not content to leave transgressors to his resentment, took upon themselves the task of retribution, and killed upon the spot an Armenian Christian, who had ventured to violate the sanctity of the place. This eastern custom is alluded to by Moore in his 'Fire Worshippers':—'The Empress of Jehan-Quire used to divert herself with feeding tame fish in her canals, some of which were, many years afterwards, known by the fillets of gold which she had caused to be put around them.'

> Her birds' new plumage to behold,
> And the gay gleaming fishes count,
> She left all filleted with gold,
> Shooting around their jasper fount.
> *Hinda*, in the 'Fire Worshippers.'

Persia seems always to have been famous for its pike, to judge from the accounts of a Polish chronicler, whose name is unpronouncable if not unspellable. This writer vouches for

[1] Mr. Pickering, the well-known publisher and collector of angling books, adopted as a sort of punning monogram on the title-pages of some of his volumes, a ring with a pike curved round it—'a pike-ring,' in fact. This is the only pike-ring I know of that can really be brought 'to book.'

one, at least, which survived to little short of a century under the protecting ægis of a certain Shah of illustrious memory. Probably it was this same Shah—as piscatorial pursuits and poetry seem to be so often united in the same person—who kept a 'tame laureate,' and of whom an amusing story is told.

The Shah one day wrote some verses himself and sent for the laureate to criticise them. 'Hafiz,' said the monarch, 'is not that poetry?'

The wretched bard struggled with his emotions, but his art was stronger than his courtiership, and prostrating himself on his face he ejaculated, 'May my soul be the penalty! but it is bosh!'

'He is mad, he is an ass,' cried the Shah. 'Away with him to the stables.'

To the stables he was accordingly taken, but after a little while the Shah wrote some more verses, and sent for the laureate to see if his taste had improved.

'Dog,' said his master, when the recital was finished; 'do you call *that* poetry!'

'Allah is wonderful!' exclaimed the miserable bard; '*take me back again to the stables.*'

To return to the great ring story, Nobbes thus sums up his judgment:—

Whether, says he, our faith will give us leave to believe the story of the ring or not, it is not material to our disquisitions, for though we cannot prove him to be so longevous as to reach hundreds, it is certain he will live to some scores of years, and one of 40 or 45 inches, which are of the largest size, may possibly count as many years as inches, and some of our own countrymen have known and observed a pike to come within ten years of the distinct age of man, and had lived longer had not fate hastened his death by a violent hand.

In natural connection with this part of the subject, the limit of duration of life, occurs that of his coming of age so to speak—when does the young pickerel cast off his jackhood and become a pike?

Walton says, at 2 ft.; Sir J. Hawkins, at 3 lbs.; Mr. Wood, at 2 lbs.; Salter, at 3 lbs.; Hofland, at 3 lbs., or when it exceeds 24 in. in length; 'Piscator' ('Practical Angler') says 4 lbs.; 'Glenfin,' 3 lbs.; Mr. Blaine, 4 or 5 lbs.; Carpenter, 3 lbs.; 'Ephemera,' 4 lbs., in his 'Notes to Walton,' and 3 or 4 lbs. in his 'Handbook on Angling'; whilst Captain Williamson recognises no distinction, but calls them indiscriminately pike and jack.

Under these circumstances, and considering that the distinction—unlike that between the salmon and the grilse—is purely arbitrary, it would appear to be desirable that for the future an 'act of uniformity' be passed; and as the majority of writers seem to favour the 3 lbs. qualification, that standard might, perhaps, be adopted by general consent as the point at which the young pickerels 'cast off the jack' and assume the full dignities of pikehood.

The pike is far from being the only subject of what a correspondent calls 'fish declension.' The following quaintnesses of fish nomenclature are taken from a book published by Randal Home, A.D. about 1688.

A Pike.—First a Hurling-pick, then a Pickerel, then a Pike, then a Luce or Lucie.

A Perch.—First a Hurling, at a year old a Tranling, second year an Egling, third year a Stitchling or Perchling, and lastly a Perch.

A Roach.—First a Rud, then a Roachell or Roachet, then a Roach.

A Salmon.—First a Shad, then a Sprat, then a Trout or Salmon, then a Mort, then a Salmon Mort, then a Salmon Peal or Samlett or Young Salmon, then a Salmon, then a Scipper Salmon. A Skegger is a little salmon which will never be bigger.

A Carpe.—First a Sizling, then a Sproll or Sprall, then a Carbe or Karbe.

A Lampron.—First a Barle, then a Barling, then a Lamprey or Lampron.

A Gorgeon or Gudgeon.—First a Sand Gressen, then a Grundel or a Grundlin, then a Gourgeon.

An Eel.—First a Fansen, then a Grigg or Snigg, then a Scaffling,

then a little Eel, when it is large then an Eel, and when very large a Conger.

A Smelt or Sparling.—First a Sprat, then a small Sparling, then a Sparling.

A Minnow.—First a Shad-bied, then a Sprat, then a Minnow.

A Barbel.—First a Barbett, then a Barbalett, then a Barb or a Barbell.

A Loach.—First a Lochett, a young Loche, then a Loache.

A Lamprey.—First a Lampron Grigg, then a Lampret, then a Lamprell, then a Lamprey.

The fattening of pike in stew ponds has led me on insensibly, step by step, until I perceive how much I have meandered away from the direct path. I find, however, I have not quite done with the original text, so I must 'try back,' or, what would be more appropriate in a fishing essay, 'make a cast.'

Returning then to the frog-eating propensities of the pike, for he is the very king stork of fable, it is a curious thing that although he will even seize the most unsavoury of morsels, the toad, the inherent nauseousness of the animal saves it, I suppose, from being actually swallowed—its skin, like that of the lizard, containing a white acid secretion which exudes from small glands dispersed all over its body as well as from the two little knobs, in shape like split beans, behind the head, from which, upon pressure, the acid also escapes.

To test this I used sometimes when feeding pike with frogs to throw them a toad, as it were accidentally, instead. It has usually been immediately snapped up and as immediately spat up again,—the same toad having thus passed a more than Jonah-like ordeal through the jaws of almost every fish in the pond, and escaped with but little injury after all.

Although, however, the pike appears to exercise a discriminating taste in certain cases, there are very few things which, in a state of hunger he will not swallow or, at least, attack. Both land and water rats are frequent victims. Sometimes they are swallowed but more often ejected as in the case of the toad, whether, as Captain Williamson suggests, owing to 'the resistance the rat makes, which I have witnessed to be very fierce—

and under water too—or whether owing to the hair or scent displeasing them, I know not, but they do not appear to be very partial to the quadruped.'

Rats which have once been gripped by a pike rarely appear to recover. They may, not unfrequently, be found dead in the weeds and bearing evident marks of pike's teeth. One very large brown rat which I thus found had the head and fore part of the body crushed almost flat by the pressure to which it had been subjected. The marvel, however, is not that these animals should often die of their injuries, but that they should ever succeed in escaping from the triple *chevaux de frise* with which the jaws of the pike are armed.

An anecdote taken from Mr. Buckland's charming collection of 'Curiosities of Natural History,' illustrates the formidable nature of these teeth, even when at rest.

When at Oxford, he says, I had in my rooms the dried head of a very large pike, captured in Holland. It was kept under a bookcase. One evening, whilst reading, I was much surprised, and rather alarmed, to see this monstrous head roll out spontaneously from below its resting-place and tumble along the floor; at the same time piteous cries of distress issuing from it. The head must be bewitched, thought I; but I must find out the cause. Accordingly I took it up, when, lo and behold! inside was a poor little tame guinea-pig, which was a pet, and allowed to run, with two companions, about the room. With unsuspecting curiosity, master guinea-pig had crept into the dried expanded jaws of the monster, intending, no doubt, to take up his abode there for the night. In endeavouring to get out again he found himself literally hooked. Being a classical guinea-pig, he might have construed, *facilis descensus Averni*, it is an easy thing to get down a jack's mouth, *sed revocare gradum*, &c., but it is a precious hard job to get out again.

The scratched prisoner was only at last rescued from its Regulus-like incarceration by Mr. Buckland cutting a passage for him through the fish's gills, and thus enabling him to make his exit *à tergo*.

To the sharpness of the teeth in the mouth of this particular pike I can bear witness, having received unpleasant proof of

the fact when carelessly withdrawing my hand from an examination of its contents.

Before taking leave of live-baiting with the float it may be mentioned that the best time for the use of the live bait is generally (in rivers) after the water has cleared, or nearly so, after the first winter's flood. This sweeps the fish into the eddies and mouths of dykes, &c. ; spots in which the live bait can be much better worked than in the open river. Indeed, float fishing with the live bait where there is any considerable current is almost useless.

In winter the fish lie nearer the bottom than they do in summer, and the bait at this time of year should not swim above the bottom more than one third of the total depth. Never leave the bait too long in one place but keep it moving either by the force of the current or by the aid of the rod and the hand. When it remains quiescent for a long time in the same spot it is most probable that it has hooked a weed.

By the way, weeds should always be carefully removed from the bait ; notwithstanding his cosmopolitan voracity, and even his alleged partiality for a pickerel weed, I have never, to my knowledge, succeeded in inducing a pike to take a bait to which I knew that any portion of weed was adhering.

Keep the bait also as much as possible in the water and as little as possible out of it. In the former case it is in the way of killing pike and keeping itself alive ; in the latter the position is reversed. To preserve its longevity as much as possible, as well as to prevent the hook breaking through, cast it with a light hand and not too far.

Under the general heading of 'Pike Baits' mention has been made of a recent idea of 'administering stimulants' to live dace and roach with a view to increasing their longevity and activity. Mr. W. O. Chambers having lately ventilated the subject in the columns of the *Fishing Gazette*, the following account of some practical experiments in carrying the idea into effect appeared in that paper :—

BRANDY AND PIKE BAITS.

Sir,—If, through the medium of your esteemed *Fishing Gazette* I may be allowed to thank Mr. W. O. Chambers for his splendid hint as to brandy being administered to bait before being used for pike fishing, I shall feel much obliged to you; and, thanking Mr. Chambers, beg leave to state, at the same time, how I went to work and with what result.

I started last Thursday week, about 1 o'clock, in search of my favourite sport, and reaching the spot where I intended to commence business, I took from my bait-can a nice bait, and gave it two or three drops of brandy, which seemed to have a remarkable effect on its nerves, and made it very lively whilst out of the water; but in this case I had no opportunity of seeing what the after-effects were, for, as soon as I threw it into the water, it was instantaneously taken by a nice pike of 6½ lbs., which I landed successfully. No. 2 bait was also treated with a drop or two of something warm, and was thrown in; this time I had more chance to see how he worked. By Jove! sir, he went about like a small steam-engine under water, backwards and forwards, round and round with amazing rapidity for about ten minutes, then under went my float, and I soon landed another nice fish of 5 lbs. No. 3 bait now coming on the scene was treated in like manner to his companions, and worked with even more vigour than No. 2 had done. He was allowed to swim about for about fifteen minutes, and away went my float again; this fellow, however, I am sorry to say, got me hung up in the roots of a tree, so I lost him (for the present). No. 4 bait came next, and he also had some grog (cold), and was allowed only a few minutes to enjoy himself, and a 3-lb. fish was the result of that bait. No. 5 bait, and the last I had, after taking a parting drink, was soon swimming about well, and seemed to be in a great state of excitement, which proved fatal to him, as he was very soon attacked by a hungry-looking fish, measuring 2 ft. 7 in., and weighing 7½ lbs.; this fellow gave me some capital sport, and after rather more than half an hour's good play he was lying with the other finny tribe of his own species on the grass.

Thus, four pike I caught in about two hours, 7½ lbs., 6½ lbs., 5 lbs., and 3 lbs., making a total of 22 lbs., which is rather an extraordinary take in these waters, and I firmly believe the greater part of my success was due to following Mr. W. O. Chambers' valuable hint in your *Gazette*, Oct. 25th—viz., 'Give your bait a little brandy before

using them.' I wonder if the smell of brandy attracts pike at all. Do you think it possible? Or do you account for it in consequence of the extra liveliness of the bait through the dose of brandy? Apologising for taking up your valuable space,—I am, &c.,

Maldon. A. S. ISAAC.

Commenting on this communication, Mr. Oldham Chambers writes :—

The letter from Mr. Isaac fully establishes the views that I hold in relation to the effect noticed by him; but some latitude must be given to the lively descriptive strain of this gentleman's letter. I disagree *in toto* with the sweeping assertions made by some of your correspondents as to the cruelty of the experiment in torturing the fish and inciting intoxication. One of your correspondents suggests that the brandy actually scorches or cauterises the delicate fibres of the fish, which, to my mind, is as fallacious as the preceding statement. I entirely agree that to advocate cruelty would be most reprehensible; but the administration of a small quantity of brandy, such as that employed in my experiment, could not possibly be the means of promoting inebriation or instigating cruelty. On the contrary, the experiment is perfectly harmless and of the greatest service to fish culture; and for the information of your readers, perhaps you will allow me to explain the nature of respiration amongst fishes, which will furnish an idea of the effect produced by the administration of spirits.

For the due performance of respiration in fishes it is essential that the circulation of blood should be carried on with sufficient velocity to allow of the interchange of gases to take place. This is effected by means of the muscles in connection with the pharyngeal passages driving the aërated water through the branchiæ. Owing to the position of the heart, the blood is propelled through the respiratory apparatus before it proceeds to the system at large. The physiology of respiration in fishes is not dissimilar to other vertebrata; since there must be nerve force to govern the respiratory movements, and control the supply of oxygen to the system, so also must there be a nerve centre, which is situated in the medulla oblongata, or that portion of the encephalon forming the junction between the brain and the spinal cord. When a fish is removed from the water death ensues from asphyxia, caused by carbonic acid poisoning due to the drying up of the membrane covering the gills. Therefore, the administration of brandy to a fish in this con-

dition serves as a means of preserving vital energy and maintaining the action of the heart for a certain period, but does not re-establish respiration directly, as its action would be of little avail, the branchiæ being in the state already alluded to. If the fish be afterwards restored to water, the value of brandy as an *aqua vitæ* is at once apparent. The dormant energy becomes immediately awakened, the stimulant operates on the nerve centre, the water moistens the gill covers, the muscles are brought into play once more, and the organism which before was almost at the point of extinction manifests vital energy which we call 'life.'

Henceforth 'to drink like a fish,' will be an expression, it is presumed, in especial force amongst pike fishers. Should brandy and water, however, fail in any case to produce the desired revival, there will still be a chance left, viz. try the well-known alcoholic concoction beloved by the frequenters of American bars, called a 'corpse-reviver.'

One other suggestion of a less bibulous character. If baits run short or seem likely to do so, it will generally be found better, instead of going on fishing with flabby or half-dead baits, to keep the bright lively baits on the hook as long as they last and when the bait can is exhausted to use up the defunct individuals with spinning or gorge tackle.

HUXING.

Before quitting the subject of live-baiting I may, perhaps, refer, though rather as a curiosity than as a practical method of live-baiting, to what is known amongst old writers as 'huxing.' Dame Juliana Berners, of oft-referred to memory, describes it thus :—

'"Yf ye lyst to have good sporte thenne tye the corde [of your gorge line] to a gose [goose] flote ; and ye shall see god halynge [? hauling] whether the gose or the pike shall have the better."'

Barker also, in his 'Art of Angling,' refers to 'huxing' in rhyme if not in rhythm.

And that other fine trick,
Which our artists call snap with a goose or a duck;
Will kill two for one if you have good luck;
The gentry of Shropshire do merrily smile,
To see a goose and a belt the fish to beguile.[1]

On this subject I may, perhaps, quote from the 'Book of the Pike.' I do not know whether the Shropshire gentlemen still include huxing amongst their favourite sports; but it is not very long since it was practised on a reservoir near Glasgow, and also on the Scotch lakes Monteith and Lochmaben. An amusing account of an incident which happened to a Dumfriesshire farmer in the neighbourhood of the latter, is given by McDiarmid in his 'Sketch Book;' it is also quoted by Professor Rennie in the 'Alphabet of Angling':—

Several years ago, he says, the farmer kept a gander, which not only had a great trick of wandering himself, but also delighted in piloting forth his cackling harem to weary themselves in circumnavigating their native lake, or in straying amid forbidden fields on the opposite shore. Wishing to check this vagrant habit, he one day seized the gander just as he was about to spring into the water, and tying a large fish-hook to his leg, to which was attached a portion of a dead frog, he suffered him to proceed upon his voyage of discovery. As had been anticipated, this bait soon caught the eye of a pike, which, swallowing the hook, not only arrested the progress of the astonished gander, but forced him to perform half-a-dozen somersaults on the face of the water!

For some time the struggle was most amusing, the fish pulling and the bird screaming with all its might; the one attempting to fly, and the other endeavouring to swim, from the invisible enemy; the gander the one moment losing and the next regaining his centre of gravity, and casting between whiles many a rueful look at his snow-white fleet of geese and goslings, who cackled out their sympathy for their afflicted commodore. At length victory declared in favour of the feathered combatant, who, bearing away for the nearest shore, landed on the green grass one of the finest pikes ever caught in the castle-loch. This adventure is said to have cured the gander of his propensity for wandering; but on this point we are inclined to be a little sceptical.

[1] Barker's *Art of Angling*.

The same author who refers to the huxing practised on Loch Monteith, also states that huxing, if it may be so called, by means of a kite—not feathered, but papered—was recently carried out with success on Slapton Ley, South Devon.

All these eccentric inventions for killing pike, however, bear a suspicious resemblance to the trimmer, or as authors formerly used to call it, 'Floater,' of the legitimacy of which, as a sportsmanlike mode of pike-fishing, opinions have fortunately undergone a considerable change since Robert Salter (1811) wrote that on 'large pools it afforded stronger exercise and greater variety of amusement than any other part of pool-fishing.'

PATERNOSTERING.

The only other branch of snap live bait fishing is 'paternostering.' The paternoster, the origin of which somewhat peculiar appellation I am unacquainted with, although occasionally used, and not without success, to take pike as well as perch—its more legitimate province—has been hitherto hardly considered as forming a branch of pike-fishing. The success, however, with which Mr. Alfred Jardine has lately developed and improved upon both the tackle and the mode of using it, has been such that this book would not be complete without some practical account both of the old and the new methods.

The old tackle simply consisted of a few yards of gut or gimp attached to a bullet (pear-shaped best), and having two single hooks, No. 8 or 9—either gut or gimp, as the game attacked was either pike or perch—which stood out from half a foot to a foot from the main trace. For pike-fishing the first hook was usually attached to the gut say a foot above the lead, and the second one, where a second was used, from a foot to a foot and a half above that. The hooks are baited by being passed through the upper lip of a minnow, gudgeon, or other bait, which is then allowed to sink to the bottom, in the eddies under banks, weirs, and in other likely holds. The line

is kept always stretched tight between the top of the rod and the lead, which should be generally as nearly as possible right under the rod point. The bite is detected by the feel.

When pike-fishing with the paternoster, it is better to let the fish do a certain amount of 'pulling' on his own account, before any attempt is made by the fisherman to assist the operation. When the tugging becomes severe, let the paternosterer play his part in the operation, by at once and strongly raising up the rod, which ought to have the effect of hooking the fish if he has got the bait well into his mouth. In any case striking is practically useless, as the hooks are small and single, and at a short distance do not require much pressure to drive them in over the barb. Moreover, by striking, if the fish is not caught, both baits are at any rate certain to be lost.

The form of this paternoster and its mode of construction is so simple and easily described, that diagrams are probably unnecessary.

Thus much as to the ordinary method of paternostering. Mr. Jardine's method before referred to, differs in several particulars as regards both construction and method of working, and is of so much interest to trollers, that I am specially glad to have the opportunity of presenting my readers with an account of his method, written by Mr. Jardine himself, which he has had the kindness to send to me for this purpose. I am glad to see that he has also given his views on some other branches of pike-fishing, which cannot fail to be of interest to all pike-fishers. But I leave him to speak for himself :—

MR. JARDINE ON PATERNOSTERING FOR PIKE, ETC.

'Although spinning for pike may be considered the most artistic way of fishing, yet I have always found paternostering most successful.

'My method is to use a 13-foot cane rod not too stiff, with large rings half inch diameter all of the same size, so that in the event of a tangle occurring in the line, it can pass through the rings easily, without checking the fish I may have hooked and am playing. To the

end of the line should be added 4 feet of salmon gut, slightly stained; and looped on to that 18 or 24 inches (according to depth of water fished) of fine trout gut, with a ½ oz. or ¾ oz. plummet for sinker; should you get "hitched up" and fixed fast to any obstruction, you have only to use sufficient strain to break the fine gut, and all you lose is the plummet. Then at the loops connecting the trout and salmon gut, attach a single paternoster hook of square bend, size No. 10, bound on 12 inches of medium gimp—copper gimp preferred, as it does not show so plainly in the water—and for the bait use a live dace (in preference to a gudgeon) about 4½ inches long, hooked carefully through both lips, it living longer than when hooked through the upper lip only. Next draw off 8 or 10 yards of line from the reel and fish all the nearest water, gathering up the line slowly with the fingers into the palm of the left hand in a kind of figure-of-eight (8) coil (a knack easily acquired by practice), slightly lifting and dropping the point of the rod but always keeping a moderately tight line, insinuating the bait into likely corners, eddies, and between weeds, carefully searching all those places usually frequented by pike. Then throw again "off the palm" to other places, increasing the distances and pursuing this method until all the water round has been thoroughly fished. A bite is known by the bait being arrested or shaken, when a yard or two of line should be paid out, three or four seconds allowed for the pike to turn the bait head-first into his mouth, and a firm draw, rather than a strike, given to drive the hook well home; if the pike runs at once on taking the bait, lift the point of the rod smartly and the fish will be instantly hooked; if in his rush he takes up all the line in your hand you will have him on the reel, and it is well in playing a fish to get the line as quickly as possible *on the reel*, as it prevents the chance of getting your line kinked or in a tangle.

'A fish under 3 lbs. carefully unhook and return to the water uninjured; in paternostering a pike generally gets hooked somewhere in the mouth, and is unhurt as he does not swallow the bait; moreover you get much better sport by paternostering, the fish fighting against restraint only, and not suffering acute pain from having the throat lacerated or the inside torn up, as is the case when using dead or live-bait gorge, both of which are most cruel and unsportsmanlike ways of fishing.

'In spinning for pike, which perhaps nearer approaches the elegance of fly-fishing than any other method, use a rod similar to that for paternostering, a fine plaited Nottingham line *waterproofed*,

the trace about 5 feet long, of salmon gut; a gimp flight of either the "Pennell" or "Thames" pattern, to match the length of bait, which in preference to a gudgeon should be a dace about 4½ inches long, it being brighter and more attractive. A lead of the *Fishing Gazette* pattern is best, as it can be attached any distance above the flight, suited to the depth of water you are spinning, and there should be two swivels between the lead and the flight, to assist the rotation of the bait.

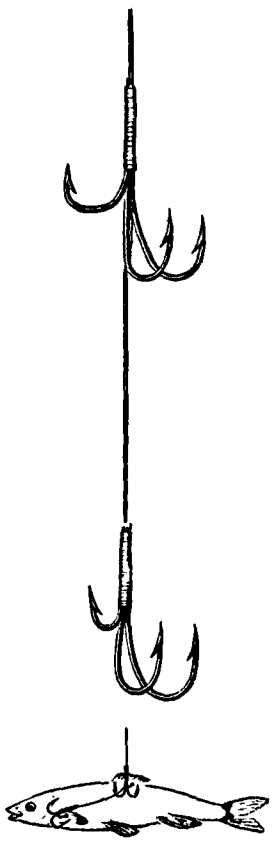
'Much has been written about a "wobbly" bait being very killing, but experience has convinced me that one which spins *straight* is more attractive and therefore catches most fish. It may be that the tackle used for a "wobbler," consisting only of a triangle passed through the vent and out of the mouth by a baiting needle, and a sliding lip hook slipped on the gimp to secure the lips of the bait, may answer the purpose very well when pike are *mad on the feed*, or in the absence of better tackle; but with such flights as I have mentioned, and baits put on to spin properly, I should back them when used by a proficient to do most execution.

'That "spinning" has its charms and advantages must be conceded, for, with no sloppy bait-can to carry, but a dozen selected baits instead, packed in bran, tackle case and flask in pocket, fish bag slung round shoulders, rod in hand, gaff in sling, warmly clad, and well booted, nothing is more enjoyable than to wander beside a "pikey" river, spinning all the likely places, catching fish here and there;—yet one does not get the largest fish spinning, a 15-pounder being an exception; to catch the 20- and 30-pounders you must fish the deeps and "lay-byes," with "paternoster" or "snap;" monster pike will not come up to a "spinning bait," from the profundities they inhabit, but, like well-fed lazy aldermen, prefer the dainty morsels to be nicely presented to them.

'When "snap-fishing" with live bait, a 10-foot stiff-built cane rod, with large rings, ⅝ in. diameter, all one size should be used and 80 to 100 yards of waterproofed Nottingham 8-plait line on a good-sized winch will not be too much if fishing large rivers or lakes where pike attain considerable size and weight. The "snaps" most in favour among pike-anglers are those known as "Jardine's snap tackle," and consist of two triangles bound on 12 inches of moderately stout gimp, the end one being two large No. 10 hooks and one small No. 1 brazed together, the small hook is placed in the base of the live bait's pectoral fin and keeps the triangle close to its gills; the upper triangle is bound to the gimp about 2½ inches

higher; the hooks are equal in size, No. 10, and one of them is put through the base of dorsal fin, thus :—

'The end of trace goes through a pipe lead of 1 oz. weight and is secured to a small spring swivel on which is attached the baited snap; a pear-shaped float, sufficiently buoyant to carry the bait and lead, is placed on the line at a height in accordance with the depth of water to be fished. The bait is then gently cast some dozen yards or more to a likely place and allowed to swim about; line can be paid off the reel, or the bait coaxed into fishy-looking eddies and quiet corners, and when a pike seizes the bait the float disappears; slack line must then be quickly reeled up, the fish struck at once, played, and if possible landed. The advantages of snap-fishing are manifold, you seldom miss hooking your prey, and if of fair size they give capital sport, fighting against restraint only, the bait not being swallowed; after unhooking a small pike, it may be returned to the water uninjured. The largest are usually taken snap fishing, and among a host of fine ones I have caught by this method, were 12 pike over 20 lbs. each, one of 30 lbs., one of 36 lbs., and one of 37 lbs.



MR. JARDINE'S PATERNOSTER-SNAP.

'Ledgering for pike is a method seldom attempted, but under certain conditions of water and weather usually successful. The tackle consists of a bullet of 1½ oz. with a hole drilled through it, the trace passed through and attached to the reel line. A good-sized shot is pinched on to the trace 2½ or 3 ft. above the bait, to prevent the bullet slipping too low down, and a single hook may be used placed through both lips of the dace or, if preferred, a "snap."

'Select a day when the river is clearing after a flood, and try deep quiet water between streams at tails of islands, or eddies where two rivers meet, for in such places dace and other small fish congregate to rest themselves in a flood, and there pike are generally then to be found.

'Throw out your baited ledger and keep a tight line; the bait will have 4 or 5 feet in which to pirouette, and after a few minutes may be gently lifted or drawn to another place, and thus all the hole or eddy searched for a pike. You will know when you have a bite, for at such times pike are savagely hungry and fight very hard for their liberty, therefore use strong tackle.

'In January 1875 after a heavy Thames flood and water just clearing, I was fishing at Sonning, and, finding no sport, either paternostering or snap-fishing, I moored my punt just above the deep eddy at the end of "long withy-ait" and tried "ledgering" with dace for bait. My choice of locality and method proved fortunate, and in one hour I caught 6 pike weighing together 46 lbs., the three largest being 9, 10½, and 13½ lbs., and they were exhibited at a meeting of the Stanley Anglers Society, at which Mr. Wm. Senior ("Red Spinner") was present, and who has mentioned the incident in his work "Waterside Sketches."

A. G. JARDINE.'

Before quitting the subject of paternosters, I may mention to those who are interested in sea-fishing, that I have found a gut paternoster constructed as described at p. 165, an exceedingly killing mode of fishing for whiting, pout, hake, &c. The use of gut in sea-fishing was comparatively rare, and, so far as the public guide-books are concerned, I believe, entirely unknown until, having discovered the great advantage of it in practice, I brought it to the notice of the fishing world.

A good illustration of the difference in the results to be obtained when using a gut paternoster in sea-fishing, in lieu of ordinary coarse string lines, &c., was given by Mr. Frank Buckland in one of his works, in which he describes the result of a fishing match held in the Solent between myself, armed with a paternoster and jack tackle, on the one side, against himself and old Robinson Crusoe, as he was locally named, one of the best hands at sea-fishing in Portsmouth, on the

other side. The result is thus described by Mr. W. B. Lord, R.A., in one of his charming sketches of seaside fishing :—

Some of my readers will remember a most amusing fishing match by Mr. Frank Buckland—fine *versus* coarse tackle—which appeared in the columns of the *Field*, the champion knights, Mr. H. Cholmondeley-Pennell, fine gut paternoster, dressed silk line, and jack rod; Mr. F. Buckland, ordinary coarse tackle and hand line; Robinson Crusoe, ditto. The result was, as our Yankee friends would say, 'the tallest kind of caution.' The knight of the jack rod and gut line being triumphantly victorious, and beating both his antagonists, together with the united crews of two or three boats anchored near them, out of the lists !

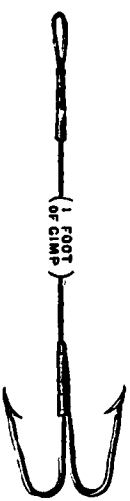
LIVE GORGE-BAITING.

The live gorge-bait cannot be considered quite so sporting a way of fishing as live snap-baiting, inasmuch as when once the fish has pouched the bait his chance of escaping being brought to basket is or ought to be *nil.* It has in this respect the same disadvantage as trolling with the dead gorge-bait, with the difference that whereas the dead gorge-bait is a method of pike-fishing which may be used when practically none other is available, the live gorge-bait is only available in the same place as the live snap-bait, unless, indeed, in ponds or lakes where, whatever the nature of the sport may be, the angler lays out a bait for pike and wanders off in search of the sport more immediately aimed at—a sort of 'leave-the-rod-to-fish-for-itself' performance, not very far removed from trimmering.

A Nemesis sometimes attends this sort of 'hedging' arrangement; unless special precautions are taken it does not happen so rarely as once in a century that a large fish carries off altogether the derelict rod and that which pertaineth to it. Sometimes it is the subject of experiments by a herd of inquisitive cows, and there is a still ulterior contingency, which is too serious to joke about, namely, that persons of indistinct perceptions as to *meum* and *tuum* may save the proper owner further anxiety as to the custody of his pet trolling rod.

A comical variation of this result is told by a gentleman who writes under the signature of the 'Medway Dace.' The narrator and his friend had left three rods and live bait tackles to fish by themselves. On their return after about an hour they made the startling discovery that their rods, lines, and baits had vanished:—

'Surely,' said H——, in a voice that greatly reminded me of another occasion, when he came out with me and found he had left the top joint of his favourite rod at home, 'Surely no one has stolen our tackle!'



GORGE LIVE-BAIT HOOKS.

'It looks most uncommonly like it,' I replied.

And certainly it did. But our minds were soon put at rest on that point, for close under a tree lay the three rods, carefully placed together. While we were wondering how on earth they came there, and for what reason they had been taken from the pond, a youthful chawbacon, with a face on him like a full moon, approached us and at once explained the mystery. Touching his hat, he said, 'Oive landed three for ye, zur, they're not werry big 'uns tho'. Whort licks me is that they were all cort in the back!' . . .

Having delivered myself of this *caveat* or protest I am free to admit there is one legitimate use for the live gorge-bait to which I have already alluded,—that is when the baits used are too large for the ordinary snap-tackle. For the shape of the hooks, which should be attached to about 1½ feet of fine stained gimp, *vide* diagram.

In this and the method of attaching the live bait consists the only difference, so far as tackle is concerned, between the snap and the gorge live bait. Detach the hooks from the swivel, and having attached them to a baiting-needle let the bait lie, or rather be held, flat in the palm of the left hand with the head pointing towards the right hand. Insert the point of the baiting-needle in the shoulder of the bait and pass it under

a broadish strip of the skin (only) from 1½ inches to 2½ inches broad, according to the size of the bait, bringing it out in the direction of the tail. Then draw the gimp gently and carefully through *until the shank of the hook is hidden under the skin.* The loop of the gimp is then re-attached to the hook-swivel on the trace and the tackle is complete.

In performing this process the bait should be handled with the utmost gentleness, not only to prevent causing any unavoidable pain, but also with the view to its longevity. The great point in which care would be required is to avoid passing the baiting-needle through the flesh as well as under the skin, and in order to effect this the bait should be held perfectly flat.

The disadvantage of this tackle, as in the case of all other gorge-baits, is, of course, that the fish has an opportunity of changing his mind if he thinks proper, and rejecting the bait before swallowing. The hooks on the other hand are less conspicuous than those used in the snap-tackle, and the fish are consequently less likely to be scared by them.

TROLLING WITH DEAD GORGE-BAIT.

The pike, my joy of all the scaly shoal.
And of all fishing instruments—the troll.—SCOTT.

The word 'trolling,' or as it was formerly spelled 'trowling,' from the old English word 'troll,' to move circularly, or in a rollicking kind of way, or perhaps from the French word, 'troller,' to lead about, to stroll, has come to have two meanings, one family or generic, and the other specific. Broadly speaking, any one who fishes for pike may be described as a troller, but in its restricted sense it applies to the particular branch of pike-fishing which we are now considering.

This use of the dead bait is the only one which can be advantageously employed in pike-fishing, always excepting, of course, spinning. The object effected by them both is, in fact, to impart an appearance of vitality where none, in reality, exists, as it is a fact well known that a pike will not under ordinary circumstances touch a dead bait when quiescent. There need be no hesitation, therefore, in at once discarding as worthless all receipts given by angling writers which involve such a condition. It is doubtful whether they could ever have been of any use. In the nineteenth century they are distinctly useless.

The origin of the art has been always attributed to Nobbes, a writer of the seventeenth century, and he has been accordingly christened 'the father of trollers.' The first edition of his book was published in 1662, and it contains engravings of gorge-tackle with both single and double hooks not at all unlike, except in its extreme roughness and coarseness, the hooks now employed. In fact, on first seeing them, I was struck by

the similitude of their barbs to the tail of the dragon which St. George has been represented in the act of transfixing for so many years that one almost wishes the dragon might have a turn now and then for variety.

Although, however, according to Nobbes the merit of being the first authoritative exponent of the art of trolling, it is by no means probable that his claim to be the actual inventor could be sustained upon critical examination.

This is also the opinion of Mr. Westwood, whose elegant 'Angling Bibliomania' is so well known and appreciated by all lovers of the gentle art and literature. In a letter addressed to me some years ago he says :—

Nobbes was undoubtedly the first English writer that discoursed at large, and in a substantive shape on the art of trolling, but that his sobriquet of 'The Father of Trollers,' asserts in any respect his invention of the *modus operandi* of the craft in England, is scarcely borne out by evidence. The title means, I take it, what that of 'The Father of Anglers' means in Walton's case—what that of 'The Father of Pike-fishers' will mean in your own, sir, when posterity agree, *nem. con.*, thus to designate you—namely, that he was the first authoritative professor of the sport.

That Nobbes himself puts in no claim to inventor's honours, is shown by his dedication, in which he ascribes all his skill as a troller to the tuition of 'The Right Worshipful James Tryon, Esq., of Bullwick, in Northamptonshire,' and to his brother, while in his address 'To the Ingenious Reader,' he adds, 'I confess I have not had that experience in the Art which many have, that have made it their business for the space of several years, *and I, but a late pretender.*'

It is true that in a preceding passage, he adverts to the silence of former writers on angling, 'I never could see,' quoth he, 'any other (than Walton and Cox) concerning trolling, though, if there be, it may be of an old standing.'

Here, however, friend Nobbes overlooks one of his immediate forerunners, Col. Robert Venables, whose 'Experienced Angler' (1662) contains the following passage :—

'The best way of angling is with a trowl for a pike, which is very delightful. . . . Let your line be silk, at least two yards next the hook, and the rest of strong shoemaker's thread, your hook

double, and strongly armed with wire for above a foot, then with a probe or needle, you must draw the wire in at the fishes mouth and out at the tail, that so the hook may lie in the mouth of the fish, and both the points on either side; upon the shank of the hook fasten some lead very smooth, that it go into the fishes mouth and sink her with the lead downward, as though she had been playing on the top of the water, and were returning to the bottom; your hook once baited, you must tie the tail of the fish close and fast to the wire. . . . All being thus fitted, cast your fish up and down in such places as you know pikes frequent, observing still that he sink some depth before you pull him up again. When the pike cometh you may see the water move, at least, you may feel him, then slack your line, and give him length enough to run away to his hold, whither he will go directly, and there pouch it. . . . Let him lie until you see the line move in the water, then with your trowl wind up the line till you think you have it almost straight, then with a smart jerk hook him, and make your pleasure your content.'

An allusion to trolling, without a description of the process, is met with in Barker's 'Art of Angling' (1651), as thus:—

'One of my name was the best Trouler for a Pike in the realm; he laid a wager that he would take a Pike of 4 feet long, of fish, within the space of one month, with his Trouling Rod; so he Trouled three and od dayes, and took many great Pikes, nigh the length, till within the space of three dayes of the time; then he took one, and won the wager.'

And 'Shrewsbury Barker' depicts the trolling-rod of this Paladin but goes no further.

Receding again a period of more than sixty years, we call into court Master Leonard Mascall, who, in 1590, presented the world with 'A Booke of Fishing with Hooke and Line, and of all other instruments thereunto belonging,' and his evidence, with pen and pencil, is to this effect:—

'The Pyke is a common devourer of most fish, where he cometh; for to take him, ye shall doe thus: Take a codling hooke, well armed wyth wyre, then take a small Roch or Gogin, or else a Frogge alive, or a fresh Hearing, and put through your armed wyre with your hooke on the end, and let your hooke rest in the mouth of your bayte, and out at the tayle thereof; and then put your line thereto, and drawe it up and downe the water or poole, and if he see it, hee will take it in haste, let him go with it awhile, and then strike and holde, and soe tyre him in the water.'

I have searched no further, for Leonard Mascall's 'Booke of Fishing' is a reproduction of the 'Booke of St. Albans,' and beyond the 'Booke of St. Albans' falls the night. The rest, if rest there be, is a matter of 'lost Pleiads,' and into that limbo of vanished things that holds the Ἁλιευτικὰ of Pancrates, the Arcadian, the Ἀσπαλιευτικὰ of Seleucus of Emesa, and many other famous scroll of the ancients, may lurk also more than one early English treatise on our sports (the 'old fish-book,' amongst them, whence Walton borrows his 'old rime'), the recovery of which would brighten the eyes and rejoice the heart of every angling bibliomaniac.

And this recovery may, after all, become a *fait accompli*—that passion of the book collector has conjured out of darkness and oblivion so many rare and forgotten treasures, that we need not despair of adding, some day, to our *Bibliotheca Piscatoria* a 'grandfather of trollers' to take precedence of Nobbes.

Let, however, the honour of the invention in this country be given to who may be best entitled to it, whether Nobbes or some other 'mightie fysher' of old, it would appear that trolling, in some form or the other, was not only understood, but very frequently practised by the ancient Greeks. It is frequently referred to by Oppian who recommended as bait a live labrax if obtainable, or, if not, a dead fish sunk and raised alternately with a weight attached. The following is the translation of Oppian's description of baiting and working this tackle :—

> . . . . He holds the Labrax, and beneath his head
> Adjusts with care the oblong shape of lead,
> Named, from its form, a Dolphin ; plumbed with this
> The bait shoots headlong through the blue abyss,
> The bright decoy a living creature seems,
> As now on this side, now on that it gleams,
> Till some dark form across its passage flit,
> Pouches the wire, and finds the biter's bit.

Nothing can be more graphic and at the same time accurate than this description of the gyrations of a gorge-bait as worked from the banks of the Thames in the nineteenth century. 'Now on this side, now on that it gleams,' would seem to indicate that the writer was well up in the more recondite

mysteries of dressing the gorge-bait, such, for instance, as cutting off one of the pectoral fins to increase the glancing effect referred to.

Oppian's description of ancient gorge-fishing is borne out by Dr. Badham's examination of the collection of Pompeian fish-hooks now in the museum at Naples. Some were weighted with lead, shaped into cylindrical lumps, which from a rude resemblance to dolphins, were called *delphini*. . . . In order to prevent the fish biting off the hook a tubular piece of horn sometimes covered the line for the space of a few inches from its junction with the hook. As gimp was unknown to the early followers of the gentle art this was a wise and effectual precaution. Homer clearly alluded to it when speaking of plunging into the sea, he says, 'She sank to the bottom like a leaden weight which placed down upon the wild bull's horn sinks quickly, bearing destruction to the raw devouring fishes.'[1]

I have in the preceding pages indicated what is in my judgment the legitimate scope and province of gorge-bait, that is, its use in waters which are so overgrown with weeds or encumbered with bushes and stumps, as to be impracticable to any other style of fishing. Under these circumstances the gorge-bait fulfils a useful *rôle*, and one to which personally I should be disposed to confine it. It has, moreover, the disadvantage that whatever is hooked by it is bound to be killed—killed, I mean, in the literal not in the piscatorial sense—and whether small or large, in condition or out of condition, nothing can ever be returned to the water. I am pleased to think that so potential an authority as the editor of the *Fishing Gazette* holds the same views. Mr. Marston says: 'We are glad to know the "gorge" system is going out of fashion. A fish hooked in the mouth (as is usual in snap-fishing) fights far better than one whose entrails are being pulled out. You can let a pike under size go without hurting him if he is hooked by

[1] Ἡ δὲ μολυβδαίνῃ ἰκέλη, ἐς βυσσὸν ὄρουσεν,
Ἥτε, κατ' ἀγραύλοιο βοὸς κέρας, ἐμβεβαυῖα
Ἔρχεται ὠμηστῆσιν ἐπ' ἰχθύσι κῆρα φέρουσα.—*Il.* xxiv. 80—82.

snap, but the "gorge" kills all. We prefer spinning for pike from the reel far and away better than any other plan ; but in many waters spinning is out of the question.'

Trolling cannot be considered either so exciting or so artistic a method of fishing as spinning, for example, although it has not been without its enthusiastic admirers and its poets also.

> I stood by a river in the wet,
> Where the trout and the pickerel met
> And waters were rushing and rolling ;
> And I said : 'O Fish, a dainty dish,
> Is there aught that is worth the trolling ?'

Scott, writing in 1758, says :—

> The pike, my joy of all the scaly shoal,
> And of all fishing instruments—the trowl.
> My bounding heart against my bosom beats
> Now while my tongue the glorious strife repeats.
> Oh ! when he feels my jerking hook, with power
> And rage he bounces from his weedy bower.
> He traverses the stream with strong career,
> With straightened string his maddened course to steer.
> He springs above the wave at length, o'ercome ;
> This evening shall he feast my cheerful home.

Though, however, no doubt quite as good a 'feast' in the 'angler's cheerful home' (when he has got him there), the pike taken by trolling does not give one the same satisfaction as one taken by spinning. One feels somehow as if he had not had a fair chance. It is like hunting a three-legged fox. Moreover, the pain or inconvenience inflicted upon the pike, whatever they may be, and, speaking ichthyologically, I am not inclined to overrate them, are an additional argument, to say nothing of the subsequent disagreeable operation of disengaging the hooks from the entrails or gullet of the pike.

The best method of extracting the hooks, which may be mentioned in this connection, is, having first killed the pike, to make a small slit in the belly at the point where the gorge-hook

is felt, and after disengaging the hook from the swivel to draw the hooks and baits out head foremost through the orifice.

Another plan recommended by Mr. Stoddart is, first, to open the gill cover and cutting through the gills themselves allow them to bleed freely. This done draw the gorge-hook upwards tightly and when it is seen cut it out with a knife. This is a beastly business however. It makes the tróller have rather the appearance, and, indeed, some of the feelings (or what should be feelings) of a butcher; besides, the appearance of the fish is spoilt.

In qualifying my opinion, as I have done above, as to the amount of pain or suffering actually endured by a pike, and probably by any other fish from the presence of a pair of gorge-hooks embedded, say, in his gullet or entrails, I had before my mind numerous circumstances which have occurred within my own knowledge, and that of others who have left their experiences on record, which seem to indicate that there is something radically different in the very nature of 'fish pain' as compared with that which it might be imagined would be suffered by a warm-blooded animal under similar circumstances. With this subject, however, I have dealt at large in a separate essay already referred to.

When considering the best plan of extracting a gorge-hook from the entrails of a pike I have often wondered whether, if the fish were allowed to retain the bait for, say, half an hour, any portion of it would be found still attaching to the gorge-hook? His digestion has been aptly compared to the combined effects of water and fire,[1] and after a few hours, according to Mr. Jesse, not even a bone of the swallowed prey can be discovered in his stomach. The same thing has been stated of the salmon.

Dr. Fleming even gives the salmon the *pas* in the matter of eating over the pike, but he thinks that the former 'feeds with a prettier mouth, silently and unobserved, and does not gobble with arid eyes and crunching jaws like the pike, so that nobody

[1] Frazer's *History of the Salmon.*

notices the quantity of food he puts away in a gentlemanlike manner. . . . The one would be a Beau Brummel at table—the other a Dr. Samuel Johnson.' Elsewhere he observes, 'It requires a large fish to be pouched to render torpid his (the pike's) muscular action, or arrest the action of his most strongly and rapidly dissolving gastric juices.'

From instances on record it would appear, however, that the taking by the pike of a fish large enough to produce torpidity is by no means so rare as the doctor would seem to suppose: 'On Tuesday, Oct. 21, 1823,' says Bowlker, 'a pike weighing 50 lbs. was taken out of a lake belonging to the Duke of Newcastle; its death was supposed to have been occasioned by its endeavouring to swallow a carp, as one was taken out of its throat weighing 14 lbs.!' It is mentioned by Mr. Wright, in his 'Fishes and Fishing,' that in 1796 a somewhat similar circumstance occurred in the Serpentine, where a 30-lb. pike was captured alive, but in an exhausted condition, nearly opposite the receiving-house, and having stuck fast in his throat a carp of the weight of nearly 7 lbs.

O'Gorman, in his 'Practice of Angling,' relates several curious anecdotes of the ravenous appetite of the pike. One which he caught had in his maw a trout of 4 lbs., whilst another seized and attempted to swallow a 6-lb. fish of the same species, as it was about to be landed. More remarkable still, however, is the following, which he witnessed on Dromore:—A large pike which had been hooked and was nearly exhausted, was suddenly seized and carried to the bottom. Every effort was made for nearly half-an-hour to bring this second fish to shore, but to no purpose; at length, however, by making a noise with the oars and pulling hard at the line, the anglers succeeded in disengaging the fish first hooked, but on getting it to the surface it was 'torn as if by a large dog,' though really doubtless by another pike; and as the weight of the fish thus illtreated was 17 lbs., the size of its retainer may be imagined.

Mr. Frederick Lupton, of the Cloister, Westminster, sends me the following anecdote:—

My friend Mr. White, of North Walsham, Norfolk, one of the finest spinners I ever met with, informed me, that some years ago, he was trolling in a lake belonging to Lord Suffield, where he hooked a pike which weighed, as he afterwards ascertained, 12¼ lbs. He had nearly succeeded in landing this fish when he felt a violent check, and immediately understood, that it had been seized by another of the same species. Mr. White told a friend, who was fishing near him, of what had occurred, and promised to show the new comer, although he should be unable to capture him. Mr. White contrived to draw both fish within a short distance of the bank, and raised the head of the larger one to the top of the water, when he opened his capacious jaws, released his prey, and sunk down again into the depths of the pool. Of course, Mr. White had no opportunity of discovering the weight of this monster, but he unhesitatingly asserts that it exceeded 30 lbs.

A remarkable instance of the pike's rapidity of digestion was communicated to me by Mr. Henry R. Francis, as having occurred some years ago, whilst he was fishing in the neighbourhood of Great Marlow. He observed a pike lying in the weeds in an apparently semi-torpid condition, and succeeded, with the aid of a landing-net, in securing it, when a large eel was found to be sticking in its throat, the tail portion of which was half-chewed up, swallowed, and partially digested, whilst the head, still alive and twisting, protruded from the jaws.

The same gentleman caught in the Thames a pike weighing 9 lbs. with a moorhen in its gullet, by which it was being suffocated; and on another occasion Mr. Chalmer caught a fish of 5 lbs. that had a smaller one half-swallowed, but made notwithstanding an effort to take his spinning-bait, and was hooked foul in the attempt! Very recently a 26-lb. pike was taken at Worksop which had *two moorhens* in its stomach when opened.

Since the above was written I have been favoured by Captain S. H. Salvin with a curious pendant to one of the anecdotes. Captain Salvin had formerly in his possession a tame cormorant, which had been for many years trained to catch fish for his master by diving—amongst other odd captures made by

it being that of a waterhen, which it secured and brought to the bank after an exciting chase. Eventually, however, the career of the feathered angler was tragically cut short; whilst diving one day, as usual, he was seized and crushed to death by a jack (weighing only 2¾ lbs.) which was itself choked in its endeavours to swallow him.

But this is rather putting the cart before the horse; first catch your hare, or rather, your pike, and that involves first

GORGE-BAIT TACKLE.

In the matter of gorge tackle, almost alone amongst fishing appliances, it would seem that we have retrograded instead of advancing. Nobbes' gorge hook, omitting the dragon tails before alluded to, was distinctly better than the hooks with which until lately trollers were satisfied to dress their tackle. In order to understand the difference and its bearing upon the troller's requirements it should, of course, be understood that the gorge-bait is a dead fish, say gudgeon or dace, through which from head to tail a double hook with a leaded shank is drawn by means of a baiting needle, the two hooks standing out well on each side of the bait's mouth. The upper end of the hook-shank is attached to the trace, and the bait being dropped head first into the stream wherever there is a hole or opening in the weeds, or even where there is none, goes plump to the bottom performing, if properly baited, sundry gyrations and twistings which are likely to attract the notice of any pike on the feed.

The pike having seized it, is allowed by the troller to carry it away freely with him wherever he likes, and when and if he swallows it, which he does invariably head first, his capture is certain, because even if they did not stick somewhere in the belly or entrails, the two hooks opening backwards from the bait's mouth cannot possibly be squeezed through the pike's gullet without laying hold somewhere or other. The point of danger in the process is that the pike, when gripping the bait may become conscious of an unusual rigidity or unbendingness

which may excite his suspicions and tempt him to eject it before the desired consummation is arrived at.

Here it is that Nobbes' hooks were preferable, at least in principle, to the gorge-hooks of the modern tackle shops. The former were short; about 1½ inch long, and finishing off in a loop at the end of the lead itself at which point they were attached to the trace. The modern hooks, on the contrary, prolonged, so to speak, the lead by a thick twist of brass wire, making the entire 'hook part' of the business from three to four inches in length which runs right through the fish from one end to the other, keeping it, of course, perfectly rigid. This rigidity not only impairs the elasticity and play of the bait, but as I have said, frequently acts as a warning to the pike to reject rather than to swallow his supposed prey.

With a gorge-hook constructed like that of Nobbes, on the contrary, the whole of the tail part of the bait has nothing running through it except a piece of soft gimp by which both the indicated objections are overcome.

Amongst other opinions which serve to confirm this view might be quoted those of 'Ephemera' and 'Piscator' (author of the 'Practical Angler'). Salter says, 'I usually take about half the lead from the shank, as I have found when a jack has struck my bait, he has sometimes left it immediately, *in consequence of his feeling the lead in the bait's body.*' He adds: 'This may be prevented by leaving that part of the lead only which lies in the *throat* of the bait'; from this latter opinion for the reasons given already, I entirely dissent. Such a remedy would be twice as bad as the disease; and, indeed, to judge by the effect produced by such an unnatural arrangement, I am forced to the conclusion that Mr. Salter could never have practically tried the plan he recommends—which I have.

It is a notion not unfrequently entertained that pike swallow their prey literally whole. This is Blumenbach's view—which is thus refuted by Mr. Wright:

With every respect to Mr. Blumenbach, I must take leave to state that he is incorrect; when fish of prey take a small bait, such

as a minnow, they seize it by the middle of its body; in turning it to take it down head foremost they in a measure masticate it; but if the prey be a large gudgeon, or a large roach or dace, it is much mutilated and only partially swallowed, that is, the head and shoulders; and the pike, perch, or trout's jaws are constantly triturating and masticating the head and shoulders of the fish so preyed upon to a pulp, and following up the same process with the remainder until it passes into the stomach.

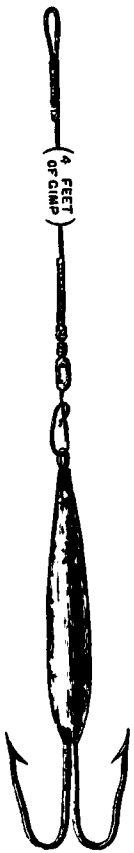
If this opinion is correct, even in a *modified sense*, which I have reason to know that it is in the case of the pike, it proves the importance of getting rid to the utmost, if possible of all unnatural stuffing, and internal stiffenings of brass wire.

The object of the modern innovation is obvious. It is by assimilating the length of the hook shank, &c., to that of the bait to have a solid piece to which to attach the bait's tail—a very necessary process with this tackle in order to prevent its slipping down, and, so to speak, doubling up when brought into contact with weeds and other obstacles. The point of the wire arming being brought out at the bait's tail, the latter is carefully whipped on to the trace, or perhaps sewn through with a needle and thread. The process is tedious, however, and to be effectual requires to be done very carefully, whilst I know few things more trying than pottering in an east wind with half-frozen fingers over the complicated miseries of needle and thread, or when perhaps the only precious hour of a short winter's afternoon is gliding away.

Moreover, if the hock shank should not be exactly the same length as the bait it results in there either being nothing to lap it to or of leaving a stump of twisted brass wire protruding in the spot of all others where it is most certain to be seen. When some years ago I had occasion to practise gorge-bait fishing rather energetically for a time these facts were brought so constantly and inconveniently under my notice that I devoted some attention to considering how the tackle could be improved; the object being, of course, to get rid of the superfluous wire hook shank, and, starting with hooks

leaded *à la Nobbes*, to find a simple and effectual method of fastening the bait's tail.

The plan I hit upon fulfils both these conditions and gets rid entirely of needle and thread and its consequent irritating delays.



GORGE-HOOKS AND TRACE.

I reduce the length of the wire shank to a loop at the end of the lead (*vide* cut), to this attach the link or trace of stained gimp by a hook swivel. I attach the loop of the gimp to the baiting needle and, having first cut the bait's tail off smoothly and neatly close to the flesh, pass the baiting needle through it in the usual way, bringing the end of the trace out as nearly in the centre of the tail as possible. Now pass the baiting needle *laterally* through the bait's tail, at about a quarter of an inch from the extremity, drawing the gimp through after it; and, finally, pass the end of the gimp through the loop thus made at the extremity of the bait and draw tight. A sort of half knot is thus formed which never slips and which can be untied in a moment when a fresh bait is required. To explain a mechanical process verbally is always rather difficult and lengthy, but I can assure my readers that the arrangement itself, when understood, is the very simplest possible—such as any tyro would manage without difficulty at the first trial—and that simple as it is (and, for that reason only, valuable) it will be found practically to make the whole difference in the comfort and efficiency of a trolling bait.

The woodcut represents the gorge hook lead and tackle as described, of about the size suitable for a largish gudgeon or a small dace—for a larger or a smaller bait the hooks and lead must be proportionately smaller or larger.

In the diagram of the hooks and shank it will be seen that a small part—about half an inch—of the latter is *left bare* for some little space above the bend. This is the portion of the hook which lies in the *throat* of the bait when adjusted, and the object in cutting away the lead is to prevent the unnatural and unsightly looking enlargement of the throat and gills occurring with the ordinary hook, and which renders it necessary to tie the gill covers down to prevent their catching or tearing in the weeds. It also avoids the necessity of sewing up the lips of the bait to prevent the hooks slipping or shifting.

This is another decided saving of time and trouble, and, moreover, makes the bait last longer by being less strained. The darting and glancing motion which it should have is also increased by the placing of the lead in the proper place—the belly; and the removal of the unnatural stiffness and rigidity before adverted to, by getting rid of the wire shank, makes a pike much more inclined to pouch it when taken.

The precise bend of the hooks themselves, whether single or double, used for gorge fishing is of comparatively little consequence, although the neatest is that shown in the engraving. The one essential is that their points should stand sufficiently *out* from the sides of the bait's head to ensure hooking and yet not so far as to be unsightly or catch in the weeds, the barbs pointing towards the eyes of the bait.

The following quotation from an article by Mr. J. Harrington Keene, in the *Sporting Mirror*, on the subject of gorge baiting may be taken, perhaps, to indicate that my improvements have been generally accepted. Mr. Keene himself, it will be observed, has apparently again refined upon my refinements, but I have not been so fortunate as to have an opportunity of seeing or testing his jointed lead, though it would seem to be a self-evident improvement:

> Whereas till even within the last thirty years the gorge hook has been 'armyd wyth wyre,' the latest and most perfect forms are without this aid to rigidity and unnaturalness. Mr. Pennell, in his 'Book of the Pike,' effectually ridiculed the idea and reformed it.

As an experimentalist myself I have found that a further improvement of the hook was possible, and by making the lead in joints I think I have succeeded in perfecting *the* gorge hook *par excellence.* I found that the rigid inflexible lead often deterred the pike from swallowing, owing to its teeth meeting the unyielding centre lead; and so after many trials I found my device so superior as to warrant me in introducing it to the public.

The best trace for gorge-bait fishing is about four feet of fine stained gimp with a hook swivel at the bottom so that the hooks can be readily attached and detached upon a change of size in the baits used.

No other swivel is absolutely necessary, but if the bottom of the trolling line is attached to a hook swivel, as recommended for all trolling lines, some little additional play may be thereby imparted to the bait. The rod, reel, and line recommended for spinning are also those most suitable to trolling with the gorge-bait.

WORKING THE GORGE-BAIT.

I have dealt with this part of the subject so fully in the 'Book of the Pike' that I here quote it *in extenso.* Subsequent impressions have not indicated any modification in the *modus operandi* therein laid down. As a further excuse for this and several other extracts from my own previous writings, it may be remarked that the same mechanical facts can hardly be described by the same person without employing, to a considerable extent, the same words and phrases, and it may be added, without the second edition being the reverse of an improvement upon number one.

The word 'troll,' meaning to rove about in a circular, rollicking fashion, expresses the sort of movement which should be given to the gorge-bait, and for the purpose of producing this it is a common and very good plan to cut off a pectoral fin on one side, and a ventral fin on the other. A good many trollers also cut off the back and anal fins to prevent their catching in the weeds, but I believe that this is a

mistake, as the stripping off of all its fins reduces the bait too much to the condition of 'King Log,' and considerably curtails the variety of its gyrations in the water. Moreover, the inconvenience which it is intended to obviate is usually more imaginary than real.

The major part of the movements of the bait being produced by itself when sinking head foremost, the principal part of the troller is to keep on raising it, every second or two, to the surface; and generally to take care that its conduct approaches as nearly as circumstances will permit the laws of perpetual motion.

Short casts rather than long ones are to be recommended as the bait can thus be made to enter the water in a downward-darting direction, instead of flat on its side, or, perhaps, tail foremost. The rule of fishing 'fine and far off'—a most salutary one under most circumstances—has not much significance in this particular kind of fishing, as the gorge bait is usually employed in deep holes, or amongst weeds, from under which the fisherman cannot be seen.

I am not usually an advocate for any Medo-Persic laws with regard to fishing up stream or down stream; but in the branch of the art now under consideration, it is essentially necessary to adopt the former method—that is, to cast somewhat in front of and above you, and work the bait downwards towards you—and for a very simple reason—namely, that the slope of the weeds with the current makes it impossible to work it properly in any other way.

This plan has also the merit of bringing the bait into contact with the pike's jaws first instead of his tail. I am aware that in this I am laying down a diametrically opposite principle to that recommended by 'Ephemera,' and a good many other authors. The question, however, is one, not of opinion, but of a physical fact, and as such can be easily tested. I should say, therefore, cast rather up and across stream, keeping the bait as much as possible in the runs and gullies between weed clumps, or at the margin of weed beds in pools, and bringing

it well home to your boat or your feet before lifting it out of water for a fresh throw. Each time that the bait is left to sink after a 'lift,' a proportionate quantity of the line should be pulled in with the left hand and allowed to coil at the troller's feet; the action being slower than, but of the same nature as, that required in spinning.

Upon a fish seizing the bait, the first notice which the troller receives of the fact is the stoppage or check of the line, very often hardly to be distinguished from that occasioned by a weed, and followed generally by a few savage little tugs or wrenches, which are produced by the jaws of the pike in his efforts to kill his supposed victim. Sometimes, however, the bait is taken by a heavy fish with a rush and jerk that well-nigh twists the rod out of the troller's hand.

A capital description of the taking of the gorge-bait is given by Mr. Stoddart in his 'Angler's Companion':—

No one that ever felt the first attack of a pike at the gorge-bait can easily forget it. It is not, as might be supposed from the character of the fish, a bold, eager, voracious grasp; quite the contrary, it is a slow calculating grip. There is usually nothing about it dashing or at all violent; no stirring of the fins, no lashing of the tail, no expressed fury or revenge. The whole is mouthwork—calm, deliberate, bone-crushing, deadly mouthwork. You think at the moment you hear the action—the clanging action,—of the fish's jaw-bones; and such jaw-bones, so powerful, so terrific; you think you hear the compressing, the racking of the victim betwixt them. The sensation is pleasurable to the angler as an avenger. Who among our gentle craft ever pitied a pike? I can fancy one lamenting over a salmon, or the star-stoled trout, or the playful minnow; nay, I have heard of those who, on being bereft of a gold fish, actually wept; but a pike! itself unpitying, unsparing, who would pity? who spare? . . .

I no sooner felt the well-known intimation, than drawing out line from my reel and slightly slackening what had already passed the top ring of my rod, I stood prepared for further movements on the part of the fish. After a short time he sailed slowly about, confining his excursions to within a yard or two of the spot where he had originally seized the bait. It was evident, as I knew from

experience, that he still held the bait crosswise betwixt his jaws, and had not yet pouched or bolted it. To induce him, however, to do so without delay, I very slightly, as is my wont, tightened, or rather jerked, the line towards myself, in order to create the notion that his prey was making resistance and might escape from his grasp. A moment's halt indicated that he had taken the bait, and immediately afterwards, all being disposed of at one gulp, out he rushed, vigorous as any salmon, exhausting in one splendid run nearly the whole contents of my reel, and ending his exertions with a desperate somersault, which revealed him to my view in all his size, vigour, and ferocity ; the jaws grimly expanded, the fins erect, and the whole body in a state of uncontrollable excitement.

The first step to be taken on perceiving a fish, or a suspicious 'check,' is to slacken the line, letting out a few yards from the reel if there is none already unwound, and seeing that all is clear for a run. The next point is to ascertain indubitably that it *is* a fish ; because, although it is perhaps comparatively seldom that a fish is mistaken for a weed for more than a few seconds, it by no means unfrequently happens that a weed or stump is so mistaken for a fish ; and nothing less than a wasted five minutes will convince the agitated troller that such is the case.

Most of my readers will probably remember Leech's charming sketch of the old gentleman who has got a 'run' of this sort, standing, watch in hand, instructing his young companion 'never to hurry a pike, Tom. He has had ten minutes already ; I shall give him another five to make sure'—whilst his hooks are to be seen palpably stuck fast in a submerged post.

This reminds me of another story which is, I daresay, quite as much public property as the above, although I cannot at this moment recollect where I met with it.

A pike fisher of the Briggs school is staying at a country house, where the guests, to amuse themselves, cause a huge wooden pike to be manufactured and fixed about mid-water in a likely looking pool. The bait takes, but, naturally, the pike does not. *Esox homo* soon discovers *Esox piscis*, and goes

through every manœuvre natural under such circumstances to induce him to bite, to the great delight of the watching jokers, who, on his return, cross-question him sharply as to his sport. This goes on for several days—minnows, dace, gudgeon have all been tried and in vain. One of the party suggests that possibly 'a frog might.' . . . Ha! *Esox homo* has taken the idea, and is off like a flash! An hour—two—he returns: 'You have him! No? impossible! Well, certainly, I thought a frog——' 'Not a bit, my dear sir, no use, no use whatever, I assure you; tried him with it for two hours, wouldn't touch it, wouldn't touch it, my dear sir; but—*he ran at me several times!*'

A second version of the story states that (driven to despair), the troller, as a last resource, hoisted the contumacious pike out with a wire snare; and a third that when he visited the scene of his failure a few weeks after, he found a large painted pike stuck upon a pole, and that *he thought he had seen it before.*

To return: when the nature of the retainer which your bait has received is doubtful, a little judicious tightening or a few slight pulls of the line will generally elicit signs of vitality should a pike be at the other end of it. If 'no sign' is made, the demonstrations may be gradually increased until the point is satisfactorily settled one way or other. Should the seizer—being unmistakeably a fish—remain passive or moving quietly about within a small compass for more than three or four minutes after taking, a slight jerk (or 'stirring,' as Nobbes has it) may be given at his mouth, which, if dexterously administered, will probably have an effect the reverse of that produced upon a horse who has taken 'a bit in his teeth,' and is hesitating whether to bolt or not.

Sufficient time should always be allowed to a pike to gorge the bait—five or even ten minutes if necessary—the fact of his having 'pouched' will *most commonly be indicated by his moving off towards his favourite haunt immediately afterwards.* If he then remains quiet without moving away again, the line

should be gradually tightened, (not struck, although Nobbes says a 'gentle stroak will do him no harm'), and the fish landed.

It will, of course, not very unfrequently happen that a pike takes a bait in or close to his favourite gite when no moving off (or 'on,' as the police have it) can be expected. In this case the troller must be guided by circumstances and his own judgment.

Should a number of small bubbles rise from the spot where, from the direction of the line, it is evident that the pike is lying, it is, according to Captain Williamson, a certain sign that he has not yet pouched. As a rule, however, it is a mistake to suppose that bubbles are occasioned by fish; and when they are so caused, Captain Williamson considers that they may be regarded as a symptom that the fish will not bite, being already satiated, and the bubbles arising from the digestive process. 'The bubblers,' he says, 'will always refuse the bait. Wounded fishes, especially jacks, evince their pain in this manner, as they do also their disquietude when unable to swallow their prey.' I must confess it appears to me more probable, and it is more in accordance with my experience, that the bubbles in this case arise either from the uneasiness of the fish at being unable to get *rid* of the bait already pouched—and the hooks of which have begun perhaps to be felt—or from the tickling of the line in the throat and jaws.

The Trent has always had the credit of producing good trollers. One of them, author of 'Practical Observations on Angling on the River Trent,' propounds a theory on the subject of trolling, which, as I do not remember to have met with it elsewhere, I shall quote for the benefit of those who may be inclined to verify the fact.

After the pike, he says, has had your bait five minutes, take up your rod, and draw your line in gently till you see him (which he will permit though he has not gorged). If you find the bait across his mouth give him more line, but if he has gorged govern him with a gentle hand.

Nobbes considers that when a pike moves up stream after being struck it is a sign of a large fish, and *vice versâ*.

Should the troller find that a considerable proportion of fish refuse to pouch after taking, it is a clear sign that they are not on the feed in earnest—in fact, are only dilly-dallying with the bait for amusement.

For when they are in earnest, there is no mistake about the matter. Your pike is the true cosmopolitan in his feeding—fish, flesh, and fowl are alike acceptable to him; animal, vegetable, and mineral—his charity embraces them all. Watches, rings, spoons, plummets, and other articles have been frequently taken from the pike's maw; and several authors have asserted that it also feeds upon the pickerel-weed, a common species of water plant. I have often known pike to run at and seize the lead of a spinning trace; and on one occasion, at Newlock-on-Thames, Mr. Francis caught a fish which had thus attempted to swallow his lead, and which was entangled and held fast by the gimp lapping round behind the gill.

The opinion entertained by our ancestors of the pike's discrimination of taste, may be gathered from the following receipt for a savoury mess for him, given in an old and, I believe, rare book, 'The Jewel House of Art and Nature, &c.,' by Sir Hugh Plat, of Lincoln's Inn, Knight, *temp.* 1653 :—

> Fill a sheep's gut with small unslaked limestones, and tie the same well at both ends that no water get therein, and if any pike devour it (as they are ravening fish, and very likely to do) she dieth in a short time; you may fasten it to a string if you please, and so let it float upon the water. Also the liver of every fish is a good bait to catch any fish of the same kind.

Nothing, in short, that he can by any means get into his stomach, which has been described as being between that of an ostrich and a shark, comes amiss to the pike, and even imperial man has on more than on one occasion narrowly escaped being laid under contribution to his larder.

The best authenticated instance of attempted *manslaughter* on the part of the pike is one which occurred, within a

comparatiyely recent date. The particulars are given by Mr. Wright :—

In the *Reading Mercury* a statement appeared that a lad aged fifteen, named Longhurst, had gone into Inglemere Pond, near Ascot Heath, to bathe, and that when he had walked in to the depth of about 4 feet, a large fish, supposed to be a pike, suddenly rose to the surface and seized his hand and wrist. Finding himself resisted however, he abandoned it, but still followed, and caught hold of the other hand, which he bit severely. The lad, clenching the hand which had been first bitten, struck his assailant a heavy blow on the head, when the fish swam away. W. Barr Brown, Esq., surgeon, dressed seven wounds, two of which were very deep and which bled profusely.

I wrote to this gentleman, who very politely obtained, and sent this day, September 18, 1857, the whole account, in writing, from the young man's father (Mr. George Longhurst, of Sunning Hill), which I give as I received it :—

PARTICULARS OF AN ENCOUNTER WITH A FISH IN THE MONTH OF JUNE, 1856.

"One of my sons, aged fifteen, went with three other boys to bathe in Inglemere Pond, near Ascot racecourse. He walked gently into the water to about the depth of 4 feet, when he spread out his hands to attempt to swim ; instantly a large fish came up and took his hand into his mouth as far up as the wrist, but, finding he could not swallow it, relinquished his hold, and the boy, turning round, prepared for a hasty retreat out of the pond ; his companions who saw it, also scrambled out of the pond as fast as possible.

My son had scarcely turned himself round when the fish came up behind and immediately seized his other hand crosswise, inflicting some very deep wounds on the back of it ; the boy raised his first-bitten and still bleeding arm, and struck the monster a hard blow on the head, when the fish disappeared. The other boys assisted him to dress, bound up his hand with their handkerchiefs, and brought him home. We took him down to Mr. Brown, surgeon, who dressed seven wounds in one hand ; and so great was the pain the next day, that the lad fainted twice ; the little finger was bitten through the nail, and it was more than six weeks before it was well. The nail came off, and the scar remains to this day.

A few days after this occurrence, one of the woodmen was walking by the side of the pond, when he saw something white floating. A man who was passing on horseback rode in, and found it to be a large pike in a dying state; he twisted his whip round it and brought it to shore. Myself and my son were immediately sent for to look at it, when the boy at once recognised his antagonist. The fish appeared to have been a long time in the agonies of death, and the body was very lean, and curved like a bow. It measured 41 inches, and died the next day, and, I believe, was taken to the Castle at Windsor.

'There can be no doubt,' Mr. Wright adds, 'that this fish was in a state of complete starvation. . . . If well fed, it is probable it might have weighed from 30 to 40 lbs.'

The same gentleman also mentions that he was himself on one occasion a witness, with Lord Milsington and many other persons, to a somewhat similar occurrence, when, during the netting of the Bourne Brook, Chertsey, one of the waders was bitten in the leg by a pike which he had attempted to kick to shore. This fish, which was afterwards killed, weighed 17 lbs.

I am indebted for the following to Dr. Genzik:

In 1829 I was bathing in the swimming school at Vienna with some fellow students, when one of them—afterwards Dr. Gouge, who died a celebrated physician some years ago—suddenly screamed out and sank. We all plunged in immediately to his rescue, and succeeded in bringing him to the surface, and finally in getting him up on to the boarding of the bath, when a pike was found sticking fast to his right heel, which would not loose its hold, but was killed and eaten by us all in company the same evening. It weighed 32 lbs. Gouge suffered for months from the bite.

This recalls the story of the pike which was said to have attacked the foot of a Polish damsel—a performance the more ungallant, as the ladies of Poland are celebrated for their pretty ankles.

Bentley's Miscellany for July 1851, gives an account of the assaults of pike upon the legs of men wading; and I had myself the privilege of being severely bitten above the knee by a fine Thames fish, which sprang off the ground after it

was supposed to be dead, and seized me by the thigh, where it hung, sinking its teeth deeply into a stick which was used to force open its jaws.

More examples might easily be adduced; but the above are sufficient to prove that in rare instances, and when under the influence of either extreme anger or hunger, a large pike will not hesitate to attack the lords of creation.

Such being the case, it is hardly necessary to say that it is by no means uncommon for animals, often of large size, to be similarly assaulted, and, in the case of the smaller species, devoured by this fish. Accounts are on record of otters, dogs, mules, oxen, and even horses, being attacked. Poultry are constantly destroyed by the pike—'the dwellers in the "eely-place,"' as Hood punningly says, 'having come to pick-a-*dilly*:' sometimes the heads of swans, diving for food, encounter instead the ever open jaws of the fish, and both are killed.

The instincts of the pike being thus shown to be not only piscivorous and ornivorous, but also homo-nivorous, we may turn with a certain sense of poetical justice to the subjective side of the picture—that, I mean, in which instead of eating he is regarded from the point of view of being eaten. Indeed, *ichthyophagously* considered, the pike is by no means an uninteresting fish to the epicure, when properly cooked; whilst, from its substantial size and nutritive qualities, it frequently forms a very useful addition to the housewife's bill of fare. A fish of from 5 to 10 lbs. is generally to be preferred for the table, for as Walton quaintly remarks, 'old and very great pikes have in them more of state than goodness, the smaller or middle-sized fishes being by the most and choicest palates observed to be the best meat,' a dictum which Nobbes endorses, and adds, 'One about 2 feet or 26 inches is most grateful to the palate, and a male fish of that size is generally fat and delicious.'

As to the gustatory qualities of the pike, however, it is fair to say that opinions considerably differ, and the old adage 'that what's one man's meat is another man's poison,' loses none of its truth as applied to the question in dispute. Pro-

bably, indeed, as in other matters of eating and drinking, there is a good deal of fashion mixed up with the likes and dislikes of 'pike-meat,' which appear to have prevailed at different periods.

We have already quoted the couplet of Ausonius, in which the ancient gourmand condemns him to 'smoke midst the smoky tavern's coarsest food,' and brands him as a fish which no gentleman would offer to his friend—an opinion shared apparently by a more modern poet, who, in his 'Bell of the Shannon,' after stating that

> There is not her like,

adds

> All other lasses
> She just surpasses
> As wine molasses,
> Or salmon pike.

Vaniere, however, in his 'Prædium Rusticum,' exactly reverses the dictum :

> Lo ! the rich pike, to entertain your guest,
> Smokes on the board, and decks a royal feast. .

An assertion which is perfectly in consonance with the facts of the case as it pointedly figures in the *Cartes de dîner* of most of the grand and royal banquets of former times—as, for instance, the feast at the enthronisation of George Nevil, Archbishop of York, in 1466 ; the feast given to Richard II. by the celebrated William of Wykeham, Bishop of Winchester in 1394.

'As for the Teviot pike,' says Stoddart, 'I consider them at all times preferable to the general run of salmon captured in that stream.'

Even with the worst of pike, however, something may be done by good cookery, and, *per contra*, bad cookery will spoil even the celebrated Staffordshire jack, 'golden-bellied and black-spotted,' and, according to authorities, the very 'king of pikes.' I can honestly recommend the following receipt for filleting pike, given me by Mrs. Robertson, the landlady of the

Bat and Ball inn, Braemore. The sauce, it will be seen, plays the part of Hamlet:

Cut the fillets, and after covering them with plenty of eggs and bread-crumbs, fry them over a brisk fire till *thoroughly browned.* Then pour over them a gravy made thus:

After removing the fillets, lay the bone and trimmings in a stewpan with two shalots and a small bunch of parsley, stew them for one hour, and strain the liquor, which add to the following sauce. Put two ounces of butter over the fire; when melted, add the above liquor, and also one tablespoonful of flour, one teaspoonful of soy, one dessertspoonful of anchovy, one of Worcestershire sauce, and a little salt.

This is the best way that I know of for cooking pike up to 4 lbs. weight or so; above that I am inclined to think that stuffing and baking with a rich sauce is better. The beauty of filleting is that if well and carefully done, the whole or nearly the whole of the bones are got out by the cook, avoiding a loss of time and the chance of being choked. Pike plainly filleted and cooked, according to the first part of Mrs. Robertson's receipt, even without the sauce, forms an excellent dish, but—as, indeed, in all fish cookery—it must be served 'straight off the fire,' as the experienced *chef* of the Café de Paris at Monaco once expressed it to me.

Another good way of treating large pike is to boil them and let them get cold, when the flesh, or rather fish, will break easily up into flakes which, when fried with a little fresh butter, plenty of pepper and salt (added continually whilst frying, N.B.) and dredged over with flour or oatmeal, will be found to make a capital dish.

The French pike, according to Bellonius, are long and thin in the belly, and those of Italy particularly given to corpulence in the same region. In fact, the whole question of goodness or badness of the pike is contained in these words: 'The food makes the fish.' Where there is good and cleanly feed, and plenty of it, there will be well-grown and edible pike: where there is none, they will be of the frog 'froggy.'

The best way to cut up, or as it used to be called 'splate'[1] a pike, is to make a longitudinal cut down the back from head to tail, when the meat can be readily turned back on each side from the ribs (by far the best cut), without carrying with it more than a small proportion of bones. These, especially the small forked ones near the tail end of the fish, are exceedingly troublesome, and, if any one of them happens to stick in the throat, dangerous. Evidently our ancestors made 'no bones' of these little trifles; as, according to Mr. Dickens, the following was the first course of a Saturday's dinner in the time of Henry VIII. :—'First, leich brayne. Item, frommity pottage. Item, whole ling. Item, great jowls of salt sammon. Item, great ruds. Item, great salt eels. Item, great salt sturgeon jowls. Item, great pike. Item, great jowls of fresh sammon. Item, great turbots.' This was the first course of a fish dinner enjoined by law as a fast for the 'good of their souls and bodies.'[2] That they could manage a second course after it, was a gastronomic feat not to be equalled in these degenerate days.

Some of our monarchs, indeed, seem to have had an especial affection for pike, as we find from Beckwith's enlarged edition of 'Blount's Tenures,' 'that in one instance a certain stew or fish-pond without the eastern gate of Stafford, was held by Ralph de Waymer of our Sovereign Lord the King, on condition that when he pleased to fish therein "he should have all the pikes and the breams," the other fish coming to the hooks, including eels, belonging to Ralph and his heirs for ever.'

Many fishermen, including Stoddart, consider that a pike is much better eating, especially for boiling, after it has been 'crimped'—a process which, however, cannot be conveniently applied to specimens of less than 4 or 5 lbs. weight. 'Crimping,' says Sir Humphrey Davy, 'by preserving the irritability of the fibre from being gradually exhausted, seems to preserve it so hard and crisp that it breaks under the teeth, and a fresh fish not crimped is generally tough.'

Immediately after having killed the fish by a sufficient number

[1] Best's *Art of Angling.* [2] *Household Words*, vol. iii.

of blows on the back of the head, make a series of deep transverse cuts across the sides, penetrating nearly to the backbone, and at about an inch or two apart. Then cut the gills underneath the throat, and taking the fish by the tail, hold it in the stream or in a cool spring for three or four minutes to let it bleed, which completes the process of crimping. If the fish is very large, as much as twenty minutes' immersion may be necessary.

Crimping, as described above, greatly improves the quality of the fish for the table when boiled; but it requires to be done the moment the fish becomes insensible, and before the stiffening of the muscles takes place.

The usual method employed in crimping sea-fish is to strike them on the head as soon as caught, which, it is said, protracts the term of their contractibility, and the muscles which retain the property longest are those about the head. The transverse divisions of the muscular fibre must take place, to be of any utility, whilst they have the contractile power of remaining life. See A. Carlisle's observations on the 'Crimping of Fish,' and Mr. Wright's 'Anatomy of Fish.'

Fishmongers often tell their customers that fish improve by keeping for longer or shorter periods. This is the reverse of the fact. Almost all authorities, who have no interest in proving one side or the other, agree that fish cannot be eaten too fresh. By carefully packing in ice, fish may be presented at table in passable condition some days after killing, but those who have tasted the pike or the salmon fresh caught, on the banks of the Severn or Medway, will not easily be reconciled to the difference. Mr. Wright has a remark on this subject *à propos* of salmon, but which applies equally to the pike:—

> The fat of salmon between the flakes, he says, is mixed with much albumen and gelatine which very speedily decomposes, and no mode of cooking will prevent its injurious effects on a delicate human constitution. I am confirmed in this opinion by every scientific man with whom I have conversed, or who has ever written on the subject.

Again, pike should be gutted as soon as killed; some of the most wholesome fish feed on the most noisome garbage, weeds, insects, &c., many of which are absolutely poisonous to man. If the fish is kept long with such undigested food in its stomach, the whole body becomes shortly impregnated and more or less unfit for food. This has been long well known in the East and West Indies, where such poisonous fish as the tetradon, yellow-bill sprat, &c. abound, but yet are eaten with safety by adopting this precaution (*vide* Linnæus, &c.). According to Sir Emerson Tennent, the sardine, a native of Ceylon, has also the reputation of being poisonous at certain periods of the year, during which it is forbidden by law to be eaten. Probably rapid gutting would prove an antidote in this case, as in other instances of fish poisons alluded to.

It is a curious circumstance that, although the roe of the pike is so peculiarly unwholesome, according to the authority of several respectable authors, the fish itself is, in the opinion of other writers, best for the table just before the spawning season, and when the milt and eggs are in the greatest state of development.

'The pike,' says 'Piscator' ('Practical Angler'), 'like grayling, is a strictly winter fish, being in best condition from October to February, and, unlike the trout, is always in best order when full of roe.' Yarrell also says that the Laplanders consider the fish in best condition in spawning time; and Stoddart mentions that by many English epicures they are considered 'in the finest edible condition when full of roe.' I cannot say for my own part that I ever remember testing the theory, which, for obvious reasons, would be a most unfortunate one if it were to be generally received. The only time when the experiment could be properly tried would be when it was determined to exterminate the breed of pike in some particular water. Nobbes says that a 'pike and a buck are in season together,' that is, in July and August, but the two following months are, in the estimation of most ichthyologists, almost equally good, and in my opinion the best month of all for a river pike is November. Of the green-

fleshed pikes referred to by Yarrell and some other authors, I cannot say that I have ever met with a specimen ; if such exist, they probably owe their reputation as a dainty rather to the fact of their rarity than to any intrinsic superiority over pike with flesh of the ordinary colour.

The best pike for the table are almost always found cheek by jowl with trout. Wansford Broadwater (in the famous Driffield stream), the Teviot, Bala Lake, Loch Tummel, Marlow Pool, the Dorsetshire Frome, &c., bear witness notably to this fact.

To show the condition into which pike may be brought by high feeding it is asserted that a quart of fat has been known to be taken out of the stomach of one about a yard long ; and in the days when fat pike were a favourite dish with fat monks, it was jocosely proverbial that the former was as 'costly and long a feeding' as an ox ! Of all pike-food eels are the most nutritious and rapidly fattening.

When in high season the general colour of the fish is green spotted with bright yellow, whilst the gills are of a vivid red ; when out of season, the green changes to a greyer tint, and the yellow spots become pale. The 'points' of a well-conditioned pike should be small head, broad shoulders, and deep flanks. The pike spawns about March and April, according to the climate, forwardness of the Spring, and other local circumstances,—the young females of three or four years old taking the lead, and the dowagers following. For this purpose they quit the open waters in pairs, and retire into the fens, ditches or shallows, where they deposit their spawn amongst the leaves of aquatic plants ; and during this period the male may often be observed following the female about from place to place, and attending upon her with much apparent solicitude. As many as 80,000 eggs have been counted in one fish.

When the spawning process is complete the fish return again into the rivers, and are then for some weeks in a state of partial stupefaction, and unfit for food. In rivers they begin to be in condition again about June, and are in their best season in November, but in still waters the recuperative process is

much slower. On the Thames, within the City jurisdiction, which extends up to Staines, pike-fishing is illegal between March 1 and May 31.

Principal Characteristics of the Common Pike.—Body elongated, nearly uniform in depth from head to commencement of back fin, then becoming narrower; body covered with small scales, lateral line indistinct. Length of head compared to total length of head, body and tail as 1 to 4. Back and anal fins placed very far back, nearly opposite each other. From point of nose to origin of pectoral fin, and thence to origin of ventral fin, and thence to commencement of anal fins are three nearly equal distances. Pectoral and ventral fins small, rays of anal fins elongated. Tail somewhat forked. Shape of head, long, flattened and wide; gape extensive. Lower jaws longest, with numerous small teeth round the front. The sides with five or six very large and sharp teeth on each side. Upper jaw somewhat duck-billed. Teeth on vomer small; on the palatine bones larger and longer, particularly on the inner edges: none on superior maxillary bones. Head covered with mucous orifices placed in pairs. Cheeks and upper parts of gill-covers covered with scales. Colour of head and upper part of back dusky olive-brown, growing lighter and mottled with green and yellow on sides, passing into silvery white on belly, pectoral and ventral fins pale brown; back, anal, and tail fins darker brown, mottled with white, yellow, and dark green.

COARSE FISH AND FLOAT FISHING GENERALLY.

TACKLE.

HOOKS.

In every description of float-fishing, as in trolling and fly-fishing, though in a somewhat lesser degree, the hook plays the part of Hamlet, and although having already dealt with this subject *in extenso* in Vol. I. pp. 4–33, and in the present Vol. pp. 74–7 in reference to trolling hooks, I do not purpose now to go into what may be called the *rationale* of hook making as applicable to float-fishing especially, the arguments in one case practically hold good in another.

What is the best hook? The hook that kills best with the artificial fly will evidently, so far as killing powers go, catch the most fish with the worm or gentle. The only points in which some slight modification of the practical application of the principles alluded to may be necessary in the case of float-fishing are the length of the shanks and turned and needle-eyed hooks. The latter present few of the advantages which the fly-fisher, having regard to his special art, may recognise in them, and the former—that is the length of the shank—is one entirely of convenience, depending upon the nature of the bait used, and the necessity of concealing the whole of the shank, as compared with the importance of missing the smallest number of bites. It is almost a self-evident proposition that a long-shanked hook of the same size and shaped bend will have greater penetrating power than a hook with a shorter shank.

In order to arrive at this conclusion without any complicated process of reasoning out the mechanical argument it is only necessary to apply a sort of *reductio ad absurdum*, and consider what would be the actual power of a hook if the shank were reduced to the same length as the point. Evidently it would possess no penetrating power whatever. Extend the same principle to a hook with a shank slightly longer than the point, and you have a proportionate increase of hooking power, double it again, you get another increase and so on.

For reasons already stated I believe that my bend of hook, shown in the annexed plate, fig. 1, will be found far the most killing for all sorts of bottom fishing. The length of shank has been especially calculated for tying artificial flies and so far as hooking powers go is, perhaps, about the perfect length. In roach fishing, however, especially when paste is the bait used, a somewhat shorter shank is probably advisable. But let there be no mistake, the convenience in more readily covering the shank with the bait is only obtained at the expense of an equivalent amount of hooking, that is killing, power. For all sorts of worm-fishing where the shank of the hook can be readily concealed the use of the full length of shank is strongly recommended. The simplest way to shorten the shanks of any of these hooks is with a small pair of pliers or in an impromptu vice formed at the joint of a pair of scissors.



FIG. 1.—'PENNELL SNECK-BEND,' HOOKS.

In heavy fishing, where hooks larger than those shown in the engraving are used, my old bend of hooks—diagrams of which, as also of the ordinary round bend hooks, are appended—may be employed. It will be seen from the plate, fig. 2, that the two bends of hooks are numbered in different ways. My own are numbered from 1, which is probably the smallest size that will often be required in float-fishing, up to 10, the largest, suitable for barbelling and other exceptionally heavy work.

Whenever sizes of hooks are given in the following pages it is these numbers that are referred to.

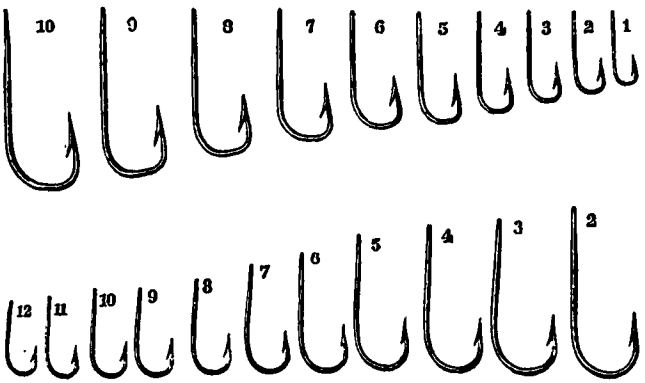


FIG. 2.—'PENNELL OLD BEND,' AND 'ROUND BEND.'

The 'sliced-hook' (*vide* cut) might be found advantageous for some sorts of fishing, such as barbelling with the lob-worm tail or fishing with the natural grasshopper, or shrimp bait, where it is desirable to prevent the bait slipping down the hook shank. I think it might be used with advantage also in almost all sorts of sea fishing with bait.



FIG. 3.—'SLICED' HOOK.

GUT.

Such observations as I am able to offer on the subject of gut and hair, having reference to the choice of methods of staining, knotting, &c., will be found at pp. 33–47 Vol. I. I do not, therefore, attempt to recapitulate them here. As regards the

REEL AND RUNNING-LINE,

the same remark applies, and I would merely say here that, setting aside such special departments as ledgering for barbel,

where an extra strong heavy line is required, and Nottingham fishing, the disciples of which pride themselves on a wonderfully light line of undressed silk, the best sort of running-line that I am acquainted with for every purpose is one of the finest possible dressed silk of the thickness of ordinary stout sewing thread, which is both perfect in manipulation and of great strength. I have one of these lines before me now that has gone through a fair amount of work during the past season, both with float, fly, and worm-fishing for trout, for which latter purpose it is especially suitable, and I find that one yard of the end which has had all the wear is still capable of lifting a dead weight of 6 lbs. The price is *2s. 6d.* for 20 yards, or *12s. 6d.* for 100 yards, it is manufactured and sold by Watson and Sons, 308 High Holborn, London, under the designation of 'Braided Waterproof Lines, No. H.' G, the next size larger, is *3s.* per score yards, and so on down to A, which is a strong salmon line. Either E or D would be suited to ledgering for barbel or other heavy work. With this line also, and a rod with stiff rings I can easily throw a light tackle and float 15 or 20 yards, and very likely more, but it will not, of course, 'float' so well as undressed line. I have never yet tried how far I could throw it, but I have repeatedly thrown it the distance in question. This facility of casting is a very important part of a float-fisher's equipment, as it enables him to command any part of a pond or river which it is practically likely he may require to reach.

The Nottingham line used with, and especially suitable to the Nottingham tackle, is equally suitable to *almost* every kind of float fishing (except jack fishing). It is made of pure undressed silk and combines great strength with the utmost lightness and fineness, being about, in fact, the thickness of the dressed line above described. Extreme lightness is desirable to give it flotation, where, as in the Nottingham style, long casts are made or the float travels a long way down stream, and there is sometimes as much as thirty or forty yards of line in the water at the same time. It must also be free from kinking

proclivities and run very easily or it will not pass through the rod rings with sufficient freedom.

A line of this kind was supplied to me by Mr. Baily, the well-known Nottingham troller, and it fulfils admirably all these conditions. It is composed of six or eight of the finest possible strands of silk plaited somewhat in a square shape. A hundred yards of it weigh exactly three-eighths of an ounce, and yet, notwithstanding this extreme fineness, I find it will lift a dead weight of between six and seven pounds, which is far beyond the strain it is ever likely to be subjected to. In fact, for all kinds of bottom-fishing this will be found a truly excellent line, but care must be taken to get the real thing. Still, for some sorts of fishing the advantage will probably be thought in practice to rest with the dressed silk line which I have already recommended, but there are many others, I am free to admit, in which the undressed silk from its greater lightness and floating qualities would have the votes in its favour, and in securing a float-fisher's outfit it would be well to have a running line of each sort. The price of the Nottingham line is 5*s.* per 100 yards of the plaited quality described; the twisted description being 2*s.* 6*d.* per 100 yards.

Whenever a reel is necessary, and I confess I seldom care about fishing of any kind without one, any ordinary check reel, such as can be obtained at every tackle shop, and not too large, will answer the purpose, observing that it is desirable the 'check' should be as light as possible, as if it is too heavy it will not allow a small fish to carry out the line with sufficient ease.

RODS.

What observations on rods, in addition to those previously given, may be desirable in this division of my subject will be probably more conveniently distributed under the headings to which they more especially pertain. 'Combination rods' have been frequently invented which, by a transposition of tops, butts, and middle joints can be made to fulfil almost any *rôle*—

both in fly, float-fishing, and trolling—more *or less* satisfactorily. Of these combination rods, one of the most ingenious that I have met with is the so-called *Multum in parvo* rod made by Mr. James Ogden, of Cheltenham. I cannot say, however, that my experience hitherto leads me to have any great faith in rods which combine such a great variety of characters. The convenience of carrying is certainly a point in their favour. In regard to ferrules, splicings, &c., I may observe that the joint fastening which is best for the fly rod and the jack rod is best also for every other sort of rod, and that anybody who henceforward buys a rod with the old joint and reel fastenings deserves to have what he certainly will get, an imperfect and defective weapon. The reel fastening already recommended for trolling and fly-rods is simply perfection, and, therefore, difficult as it is to prophesy what future discoveries may *not* bring forth, in this case, at least, we may assume to have approached finality. When an invention fulfils every demand which the most *exigeant* can imagine, there is little left for future inventors to experiment upon.

Before quitting the subject of rods, let me recommend that for every description, whether trolling, fly-fishing, or float-fishing, the rings should be stiff, upright rings, although for the last-named object—float-fishing—the rings may be very much smaller than those required for trolling. Such rings made of steel need be no heavier than the ordinary flapping brass rings, commonly sold at the tackle shops, which are subject to innumerable drawbacks—the first being the habit of sticking at some point or other of the rod and so preventing the free passage of the line, the second is their coming off altogether, leaving a 'ghastly gap' in which the line loops itself.

CREELS.

As the bank fisher has generally some *impedimenta* to stow away, and being more or less stationary, prefers setting down his basket to carrying it constantly on his shoulder, he would probably prefer the ordinary wicker-work creel to the water-

proof bag of the trout-fisher, which, however, when empty weighs next to nothing.

It is bad enough to have to carry an empty panier when it is a light one, but when it is a heavy one it is more than human nature can stand. Some of the best and most recent improvements in the matter of fish-carriers, whether bag or basket, will be found figured in Vol. I. pp. 93–7.

LANDING NETS.

A gaff is rarely of any use in float-fishing, as the fish caught seldom run of sufficient size to make its application necessary or, indeed, possible.

A landing net with a fairly long handle will, however, be found an indispensable adjunct where the fish run anything over half-a-pound, and even under that weight, especially in the case of fish that are not 'leather-mouthed,' the presence of a landing net will frequently prevent loss. The handiest net for all sorts of fishing that I know of is that already described and here repeated to save the trouble of reference. The mode of fixing the arms of the net combines the utmost simplicity with efficiency and strength; the two arms can be separated in a moment, when they lie flat together and roll up in the net like a walking-stick. The net itself should always be made of oiled silk, both for durability and also to prevent the hooks catching, as they are apt to do, in the fibres of ordinary string or twine nets. A net of the measurements given is the most suitable for trout fishing with the fly, where the fish do not run very large. It would be found large enough for landing any fish up to 1½ lbs. or probably, 2 lbs. with a little management. For barbelling and chub or bream fishing it would be advisable to have one at least fifteen or sixteen inches between the points. In order to make a net of this size carry well, however, the supporting shoulder cord will have to be proportionately lengthened and the butt of the handle leaded, to prevent, in the first place, the net touching under the arm of the fisherman, and, secondly, over-

balancing itself and falling out of the carrier altogether. The necessity of this would doubtless be diminished, if not nearly obviated, by the suggested alteration in the het handle that I

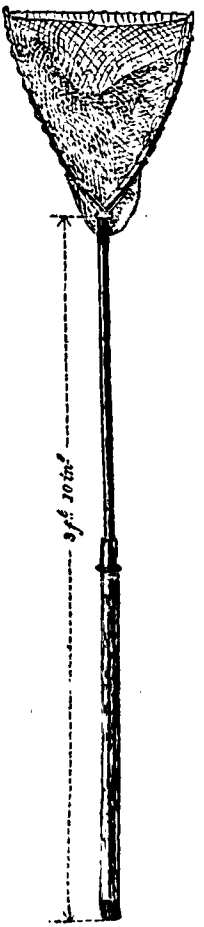


FIG. 1.—LANDING-NET EXTENDED.

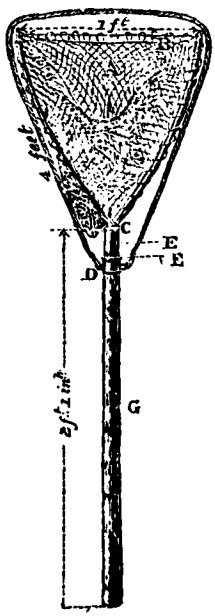


FIG. 2.—LANDING-NET CLOSED.

have already made, namely, that the catch-rim against which the suspender is supported should be put right up at the top of the ferrule, at C, in fact, instead of at D (*vide* diagram 2), thus adding materially to the balance as well as to the general convenience of the whole thing.

It would then, I believe, be an absolutely perfect net. The net is the production of Messrs. Hardy Bros., Alnwick, and the handle and carrier that of Mrs. Williams, of Great Queen Street, Lincoln's Inn Fields. I have merely performed the part of mortar in uniting the two bricks of the edifice. But, no doubt, after this book is published, at least these two tackle-makers will make the whole net complete as shown.

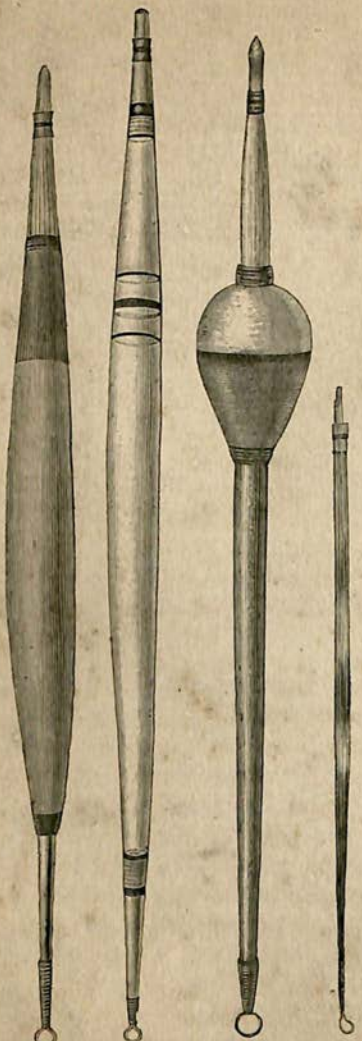
In landing a fish, the net should be kept as much out of sight as possible until the moment of using it, when it should be rapidly, but steadily, passed under the fish from *below and behind*; the movement of getting the fish into the net being, therefore, a lifting and 'sweeping' movement, so to speak.

FLOATS, SHOT, AND SUNDRIES.

FLOATS.

Floats are amongst the items in fishermen's equipment which have also, I think, been carried as near the point of perfection as possible. Floats of the most fascinating shapes, of every size, colour, and combination of cork and quill, can be obtained in the tackle shops. For the sake of convenience, I have had half-a-dozen of the most useful shapes engraved.

No. 1 is made of cork with a porcupine quill running through the middle. It has the merit of being one of the strongest possible forms of float, sightly, and at the same time a 'good steady carrier,' in fact, the float fisher will find that made of different shapes and sizes, there is no float which can be more satisfactorily used in the greatest number of circumstances. And this observation applies as well to pond as to river fishing.



NO. 1. NO. 2. NO. 3. NO. 4.

No. 2 is made entirely of tapered quill. It is beautiful as a work of art, and with ivory tips exercises a decided fascination upon the minds of many roach fishers, by whom, indeed, it is most frequently patronised.

No. 3 is a variation of No. 1, the central shaft of it being again of porcupine quill, and the enlarged portion of cork. This is a float especially suited to perch-fishing in lakes and ponds, and

'Should you rove for a perch
with a pink or minnow,'

will carry the latter very satisfactorily.

No. 4 is a very small-sized plain porcupine quill, and can be used of the size shown in the drawing with advantage where the very finest fishing is necessary, as the line requires to be only very lightly shotted to cock the float, and at the slightest bite it is taken under water, being also so small and unattractive in colour as to disturb the water very little. For river

fishing, however, where there is any current to speak of, No. 4 will be found practically useless, as the slightest touch, whether from weed or gravel, or even the sweep of the current itself will suffice to carry it under.

For ordinary float fishing the four descriptions indicated will be found all that the most fastidious can require. Of float No. 1 it would be desirable to keep three sizes, one larger and one smaller than the pattern. Where it is necessary to fish deep in a strong stream, it is also necessary to have a good many shot on the line to carry the bait with sufficient rapidity to the bottom, and to prevent the stream unduly 'bagging' the line. For this purpose it is, of course, also necessary to have a float of corresponding carrying powers, and I think that even a fourth size of No. 1, a still larger size than those already mentioned—making altogether four sizes of No. 1—ought to be kept by the float fisher in case of emergency. Nos. 2 and 3 are also made both smaller and larger, but on the whole, I think the two sizes represented will be found most convenient.



NO. 5.

So much for ordinary floats; I now come to the extraordinary floats.

No. 5 is a smaller size of the Nottingham or travelling float—that is, the float used in what is known as the 'Nottingham style' of float fishing. Its peculiarities, it will be noticed, consist first in the fact that it is bow-shaped instead of straight, and that the bottom loop is at right angles with, instead of perpendicular to, the shaft, and that, in lieu of the ordinary quill or gutta-percha cap, there is a small projecting brass loop through which the line can run with perfect freedom. The float, therefore, travels up and down the line, and at the point where it is intended it should rest, that is, as the expression is, at the right 'depth,'

a small piece of gut or line is knotted in the running line above the float, with the result that, of course, when the line is running downwards through the rings to this point, the float remains stationary. It is thus that the Nottingham fisher is enabled to make such long casts. As the line is drawn back out of the water, the float naturally slips down the line until it is stopped by the shot, and in this position forms an additional weight at the point where weight is most essential to enable a long cast to be made with ease. Having drawn in his line up to the 'sticking' point, i.e. the transverse piece of gut or quill—which may be the length of his rod or even more above the float—he makes his cast to ten or twenty, or, perhaps, even twenty-five yards, as the case may be, and giving line freely, the shot carry the bait down to the bottom of the river or pond to the depth which has been already carefully plummed, leaving the float as usual on the surface. This is, however, only one of the two great advantages of this kind of float. The second is the fact that in striking the fish from whatever distances, especially long ones, the stroke has not to overcome the *vis inertiæ* of the float before it can reach the mouth of the fish. This is a point of great importance, and one without which fishing in the Nottingham style, that is, covering long reaches of water at great distances from the fisherman, could not be successfully carried out.



NO. 6.

No. 6, the last float in the list, is probably still more entitled to be called extraordinary. It is called the 'electric-float,' and is supposed to be luminous at the top, so that in night fishing it is always readily perceptible.

N.B.—I don't assert that the float actually fulfils these conditions, but they are the specialties claimed for it. What the object of the circular notch round the upper part of the cork may be, except to hold the little indiarubber ring now shown

about half-an-inch above it, I am unable to explain, and if it is intended to hold it, I can furnish no explanation of why the ring should be placed at such an unusual part of the float, unless it be to make, so to speak, a higher stand for the lamp.

Given, however, the fact that one can see the float in the dark, the next point that arises is whether the fish can see the bait, or if they can, are likely to bite at it at that part of the twenty-four hours. I must confess again to not having tried the experiment practically, and, therefore, in summing-up these few remarks on the 'electric-float,' all I can say is that if it is not 'true' it is at any rate 'new.'

Besides the floats shown in the engravings, there is still another very useful kind of float which I had overlooked. It is made the lower part of porcupine and the upper of goose or swan quill. In consequence of the amount of air contained in the upper portion it is an excellent carrier of its size, and, therefore, worthy of an honourable place in the float-fisher's table of precedence.

Another float, which, if not extraordinary, can certainly hardly be called ordinary, has recently been invented by Mr. Gillet, the well-known tackle-maker of Fetter Lane. It is a float which *cocks itself*, and is called 'Gillet's self-cocking float.' It is strongly recommended by Mr. Greville Fennell in his 'Book of the Roach.' After stating his fruitless efforts to circumvent the roach of certain ponds, he says:—

> We then bethought us to imitate as nearly as possible the action of the slow descending particles of loose ground-bait thrown in to allure the fish and instead of using a shotted line, which sank rapidly, and consequently unnaturally reaches the bottom long before the ground-bait, we removed all the shot, and placing sufficient in the quill, we found we had achieved a success, as it permitted the bait to sink by its own gravity. The effect was immediate and decided. . . . This method is wonderfully destructive to dace when the house-fly is used.

This float is weighted so as to swim the proper depth as weighted by the line, hook, and bait, 'when' says the gentle-

man who describes it, 'it may be regulated to detect the finest bite.' This writer also says that he has been very successful with it in mill tails amongst the dace, baited with a single gentle or red-worm, when with the ordinary shotted float he could not succeed in catching them. The self-cocking apparatus consists of a drop or two of quicksilver enclosed in the end of the transparent tapered quill.

The object of this is to dispense with the

SHOT OR LEAD WIRE,

which latter, intended not only to cock the float, but also to carry the bait to the bottom, are best used large rather than numerous and, with the exception of the lowest one, distributed, in pond fishing, as far away from the bait as possible. In river fishing it is necessary to get the bait quickly to the bottom and to keep the current from lifting it off again. Consequently, it becomes necessary to get the shot somewhat closer together on the lower part of the line. The shot should be heavy enough to submerge the float up to the, as I may call it, high water mark, generally about three-quarters of the way up, but in many cases the float swims better and bites can be more readily perceived when the float is sunk rather over the mark in question.

Some float-fishers instead of using split shot, with the annoyance of having to bite them on with your teeth when they have to be attached, and cut them out with your penknife at the risk of the line when they have to be detached, use a soft leaden wire, the invention, I believe, and, at any rate, manufacture of the Manchester Cotton Spinning Co., 51 Corporation Street, Manchester, which can be coiled with great facility round the line with the fingers and uncoiled again as soon as it is wished to alter the 'swim of the float,' or the float itself. An illustration of the wire coiled on gut line is annexed.[1]

[1] The actual leaden wire, of which samples have been furnished to me by the Company, is about as thick as the finest twine. It is sold by them in hanks or knots of 15 yards, price one shilling the hank. The Manchester Company has

This fine wire is, however, more suitable for fine tackle and very light fishing than for floats requiring to be heavily leaded. The piece of lead coil represented is about equal to two No. 4 shot, and would cock a porcupine quill float about half as long again as No. 4. For very light tackle it has however, I think, several advantages, one of which is that there is no danger of nipping the line, as is the case with shot which have been squeezed tightly on. All that is necessary to coil the wire is to lay a pin parallel with the gut, twisting the wire round both; and then, after withdrawing the pin tightening the coils as much as requisite by twisting them with the finger and thumb.



LEAD-WIRE FOR WEIGHTING FLOAT-LINES.

To return: after the float naturally comes

THE PLUMMET,

which is essential to ascertain the depth of the water and the distance from the bottom (or on the bottom, as the case may be) at which it is desired that the bait should travel. The best of the old-fashioned plummets is simply a sheet of soft lead wound round the line above the hook in the position shown in the engraving (fig. 1). An improvement upon it was, however, exhibited last year by Mr. Thomas Hines, of Norwich. The action of it will be under-

also sent me samples of a very fine soft copper wire for lapping over pike tackle, finishing off top ring fastenings, &c., and other analogous purposes. They have been for many years manufacturing a superfine 'thrown silk,' as contrasted with 'floss' silk, on the one hand and sewing silk on the other, for whipping hooks, flies, &c. An immense comfort will be found in tackle-making, from the use of this silk, which, though exceedingly fine is strong enough to admit of considerable strain without breaking. The finest and purest silk of all, however, is that used by the gold twist makers of Little Britain, London, in their manufacture of gold lace for buttons, uniforms, &c. For 'waxing' this and other kinds of silk, a very small piece of cobblers' wax about as big as a No. 1 shot and rolled between the finger and thumb will be found a great convenience. When used in larger lumps it is difficult, especially in cold weather, to keep it at the necessary temperature.

stood by a glance at the illustrative diagram (fig. 2). The thumb being pressed upon the point *b*, the loop, *a*, is pushed

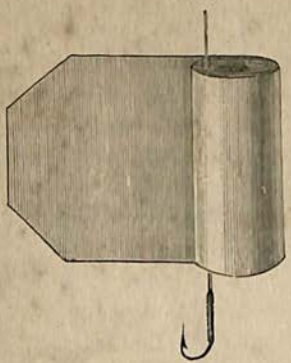


FIG. 1.



FIG. 2.

upwards by a spring, the hook passed through in the position shown, and kept afterwards in its place by the downward action of the liberated spring.

A ROD REST.

A *desideratum* which will add greatly to the comfort both of the bank and punt fisher, has been lately patented by Messrs. C. L. Matthews & Co., No. 1A Wynyatt Street, St. John Street Road, London, E.C., under the name of the 'Adjustable Fishing Rod Holder.' This invention, of which diagrams are appended, is obtainable from Messrs. Matthews, wholesale and retail. The rod holder in black iron costs 1*s.* 6*d.*; the boat clip, the same; or better finished and nickel plated twice as much. Fig. 1 shows the rod holder as it would appear when stuck upright in the bank. Fig. 2, the same stuck in a perpendicular bank. Fig. 3, the boat clip, by which it can be fixed to the side of the punt. Fig. 4 shows the adjustment of the boat clip with the rod holders in position. The inventor claims the following advantages amongst others for his rod holder :—

1. The rod can be fixed so that the butt end comes to the edge of the water, thus bringing the full length of the rod into use.

2. The rod holder can be adjusted so as to fish when the water is bank high or some feet below.

3. The rod holder can be stuck into the sheer face of a high bank (fig. 2), and the point of the rod depressed as near the water as desired.

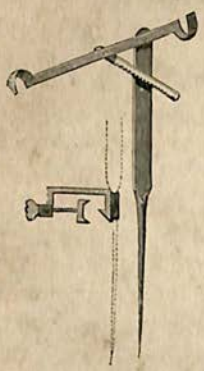
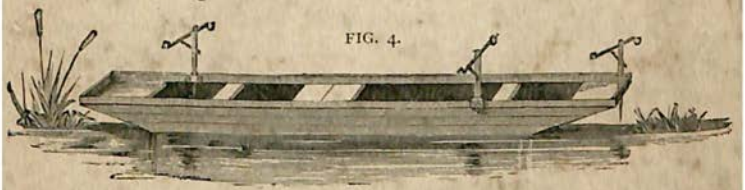


FIG. 3. FIG. 1.



FIG. 2.

FIG. 4.



AN ADJUSTABLE ROD-REST.

4. The rod is so held that instantly a bite is seen one can strike as freely as though it had been held in the hand all the time.

5. The rod holder can be adjusted to any angle without taking it out of the ground.

6. In boat fishing, the same advantages attend the use of the rod holder as when fishing from the bank. All anglers know how awkward it is to have the rod lying across the boat.

7. When using the rod holder, there is no danger of losing the rod; it cannot roll or tip from the boat or bank, no fish can run off with it, and the pressure of wind only makes it hold tighter.

8. The rod holder holds equally well long or short, thick or thin, light or heavy rods; in fact, it is so adapted that the greater the strain the greater the security.

9. The rod holder when not in use will close up in such a small compass that it may easily be carried in the bag, basket, or pocket, its weight being but a few ounces.

Float Caps.—The best float caps are quill, as unless the outside silk lapping gives way they are practically indestructible. Not so gutta percha caps, which after keeping a certain time lose all the qualities of elasticity and almost of cohesion. I have before me a box of gutta percha caps which have been some years in stock and they break to pieces merely on being taken hold of by the fingers.



FISHING PLIERS.

Tackle Varnish.—The appearance as well as the durability of all fishing tackle is enhanced by the addition of a coat of varnish over the silk lapping. A receipt for the best varnish for this purpose with which I am acquainted is given at page 17.

Tackle Vice.—A vice which can be attached to the table and containing a hook for loop-tying and other incidental purposes will be found a luxury to those who make their own tackle.

Fishing Pliers.—Mr. R. B. Marston has invented a most excellent combination of the above. It is so useful and complete that I append a diagram of it. It contains :—

1st, a strong pair of pliers.

2nd, shot splitter.

3rd, wire or hook cutter.

4th, by an ingenious contrivance in the centre of the joint between the two arms, a cutter for extra thick wire.

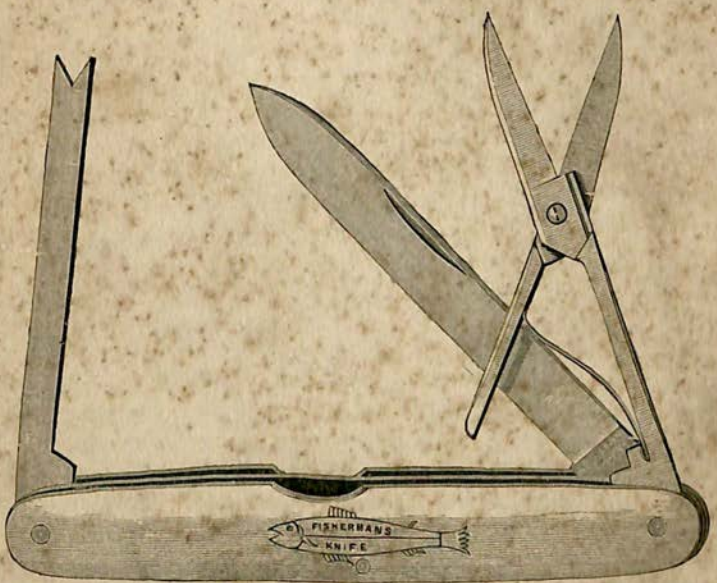
5th, screw-driver.

6th, a sort of gimlet for boring broken joints out of ferrules.

The pliers can be obtained of Messrs. Barron and Wilson, King William Street, Strand.

'THE FISHERMAN'S KNIFE.'

For all sorts of float- as well as fly-fishing, a pocket-knife with a 'disgorger' blade that can be carried anywhere, and



opened readily from any position, is a great, I might almost say, indispensable convenience.

The 'Fisherman's Knife,' as it has been christened, figured in the engraving, a descendant of my other knife rechristened the 'Troller's Knife,' contains all the outdoor requisites in a thoroughly compact form. It is manufactured and sold by Messrs. Watson and Sons, 308 High Holborn, London, at the very modest price of 6*s.* 6*d.*

A very convenient general tackle-box is sold by Messrs. Chevalier, Bowness and Bowness, of 230 Strand. This box, which is made in japanned tin, is designed to carry a complete stock of tackle, as well for the fly-fisher as the troller, &c.[1]

[1] Depth, 11 inches; length, 14 inches; width, 10 inches. In the lid are compartments, containing traces, casts, &c. Two trays for artificial baits; one tray for salmon flies, and one tray with four partitions for trout flies. There is a large space underneath the bottom tray for reels, lines, and tackle generally. The price of the tackle box is three guineas.

BAITS.

WORMS AND HOW TO BAIT WITH THEM.

I wish you all joy of the worm.—*Antony and Cleopatra.*

I HAVE usually found that the best worm for all sorts of fishing, excepting ledgering for barbel, or bream fishing where the fish run large, is the brandling or dunghill worm, found in manure heaps. The manure, however, that produces these worms in perfection should not be too old nor too new, but in a sort of half-and-half condition, which, although the process can never be an agreeable one, takes away part of the extreme nastiness of collecting them. Moreover, when the right spot is discovered, they are generally found in great abundance. Probably the pungent smell, derived, I suppose, from its unsavoury habitat, as well as its enticing red colour, are the causes of the superior attractiveness of the brandling. Before being used it should, however, for the double purpose of increasing its brightness and its toughness, be thoroughly well 'scoured;' and to effect this, the simplest and best way that I am acquainted with is to place it in well damped moss for two or three days before use. At the riverside worms may be carried either in a box or small bag, the latter probably the most convenient, as it admits of more moss to keep the worms fresh and lively, and can be attached to the button-hole. A dead or disfigured worm should be at once discarded and the hook rebaited.

Mr. Alfred Mackrill gives the following recipe for keeping worms after they have been caught. His establishment, it will be observed, is on such an extensive scale, that it might well

be dignified by the title of the 'Wormery;' this, of course, gives additional weight to his recommendations:

I have, he says, six tubs in the garden about 2 feet each in diameter and about 4 feet deep. These I sink into the ground 15 inches, and then fill them up with garden mould about 20 inches, and as I collect the worms I place them on the top of the mould in tub No. 1 until I have 2,500, and then the other tubs until full.

The worms will live in tubs so arranged for months; no trouble need be taken. The worms will work down into the mould. A cover must be placed on the top of each tub to keep the birds and rain out, the cover to be slightly raised for ventilation. I look at the tubs once a week, and if I find any dead ones at the top I immediately remove them.

The worms can only be taken on a warm, damp, moonless night, and on these favourable evenings I catch my supply. During the close season I manage to get nearly 20,000 lobs, and have plenty during the hot summer months when worming is out of the question.

Now, for the blood-worms and brandlings. These I have to breed. The blood-worm will be found in rotten, decayed leaves in abundance. The brandling I breed in the following mixture: stable dung, garden mould, vegetable matter of all kinds, the refuse of the kitchen, watered continually with the cook's pot liquor. A heap of this made up 12 feet square and 2 feet deep will supply millions of worms. Now comes the most important part—the preparation of the worm for the hook. I take two flower-pots large enough to hold two quarts of water, well plug the hole at bottom with a cork, fill them three-parts full with fresh moss washed very clean; the moss must be wet, but not very wet. Pick out the brightest and pinkest-looking worms—say, one hundred—place them carefully on the top of the moss, cover the pot over to prevent the worms crawling out, place the pot in a shady corner, leave it for twenty-four hours, then take your other pot and place the worms very carefully one by one in that; repeat this for six days, taking care that the moss is fresh and well washed each time. At the end of the sixth day you will have a worm clean, transparent, and full of life. The worm will then be ready for your bait-box, which should be nearly full of fresh moss, well washed, and be wet, but not too wet.

The worms for the ground-bait I clean in moss for two days only; you want the fish to select, and if you have the choice morsel on your hook there is every probability that on the hook

will be taken. The brandling and blood-worms for ground-bait, I simply take as many as I want out of a stock pot. They will be found in a compact mass at the bottom, and do not require cleaning for ground-bait. Place these in clean washed moss in a small box, and all is ready. A bag of boiled rice (2 lbs.) and the same quantity of soaked bread completes the ground-bait, with a bag of bran to mix with the whole. Never throw a dead worm in with your ground-bait; one stinking worm will drive all the fish out of your swim. Fish are a very great deal more particular than many anglers are aware of. I close my remarks with the following: One may be a very skilful angler, but, as old George Hone says, if the fish won't bite, 'nobody can ketch 'em.' If you want the fish to bite study the bait.

When the brandling cannot be obtained, of other small worms the reddest are the best.

For barbelling, bream, and chub, the tail end of a lob-worm, the largest species of worm that we have, appears for some reason—probably because it is larger—to be a better bait. The lob-worm may be constantly obtained in the same spots as the brandling, as also in kitchen gardens, and generally in any moderately damp heavy soil. Another favourite 'lie' for this worm is under an old log, or anything that by pressing on the soil keeps it more or less constantly humid. The easiest way, however, to gather lob-worms, especially when any large number are required, as for ground-baiting for barbel, &c., is to collect them with a lantern at night, on low-lying dampish lawns and the grass edges of gravel paths. At this time they come out of their holes, and may, in a favourable situation, literally be scraped up with the fingers by dozens, so that I have repeatedly filled a quart pot with them in the space of half an hour. When there is not much dew, or the hour is not very late, the worms only come partially out of their holes, keeping their tails in, apparently to facilitate an immediate retreat, and in this case some dexterity is required to cut off the retreat successfully, and to avoid breaking the worm in doing so.

Various prescriptions have been given for making the lob-worms come out of their holes in an unnatural manner and

in the daytime. The following recipe was given me by a gentleman of my acquaintance last year in Scotland. Though I have not tried it, I have no doubt his prescription is good.

'Mix a little mustard in warm water and with a jug pour it into the worm holes along the sides of the gravel walks or carriage drives, and the worms come bolting out like rabbits.'

A decoction of walnut leaf water poured on the ground, has been recommended as a prescription for bringing them to the surface, *nolens volens*, for the last two hundred years, or at any rate since the time of Chetham, who, in the second edition of his 'Angler's Vade Mecum' (*temp.* 1689) says: 'In great droughts pound walnut leaves, and put the juice thereof mixed with a little water into their (the worms') holes, and it drives them out of the ground.'

Another author, 'R. H.,' in the 'Angler's Sure Guide' (1706), quoted by Mr. Alexander D. Campbell, treats on the subject at still greater length:

There are divers other ways of getting these worms, as by bruising green hemp, or walnut-tree leaves, or the green husks, the blades of leeks or onions, and laying them to soak, or boiling them in water, and after they have been soaked twelve or fourteen hours, or boiled an hour or two, pour the water on the ground in places where you see many worm castings, or into the worm holes; or by mixing soot and water, or salt and water, and throwing it on such places, &c. But I use none of these last ways, but only in case of necessity, because it hurts the worms, and makes them sick and many of them to die.

I have much pleasure in placing any or all of these recipes at the disposal of the National Fish Culture Association, whose energetic secretary lately advertised, I see, for 'tenders' for a worm contract, for the benefit of the fish in the South Kensington Aquarium.

In baiting with a whole lob-worm, dip the finger and thumb of the left hand in dry sand, then take the worm between the two and insert the point of the hook either exactly at the point of the head or just below it as desired, threading it, as it were,

down the centre, until at least two-thirds of the worm has been run upon the hook and line. When the finger of the right hand can no longer touch the hook shank, the head of the worm must be pulled upwards with the two first fingers and thumb of the right hand, at the same time that with the left the threading process at the point of the hook is continued.

Another plan, which is easier than the above, is to enter the hook point at the head as described, and after passing it through as much as the shank of the hook will cover, bring the point out again and run the worm clean up on the gut two or three inches above the hook, then again insert the hook point at the orifice from which the gut is drawn out. Repeat the threading process towards the tail of the worm until again the shank of the hook completely disappears, when the gut being drawn tight the bait is completed.

In using the lob-worm tail only, the worm must be broken about the middle, longer or shorter according to circumstances, and the hook inserted at the point of the breakage, the worm being then run up the hook until the shank is somewhat more than covered, and only the end of the tail remains at liberty.

For baiting with a whole brandling or other small worm with a single hook, the same plan as that employed for the whole lob-worm should be followed, with the difference that the hook-point must be inserted at or a little above the 'knot'—the worm in this case being of course unbroken—and that it is better to leave a gap between the spot where the point of the hook is first brought out and that where it is re-entered in the worm. Baiting thus the hook does not require to be run in quite so far, as, when the line is pulled tight and the upper part of the worm drawn down, the exposed portion of the hook-shank will be covered by the upper portion of the worm.



TWO-HOOK WORM TACKLE.

Where my two-hook tackle is used (*vide* cut) all this disagreeable part of the business is dispensed with.

GENTLES AND PASTE.

It has been stated by a roach fisherman of experience that the gentles or maggots—the larvæ of the blue-bottle—obtained from fish offal are finer, and appear to be preferred as bait to those obtained from the liver of the sheep or bullock. Those who are very 'nice' about such matters can easily satisfy themselves of the accuracy of the assertion by a trial. *Fiat experimentum in corpore vili!* Whatever be the source from which gentles are obtained, they should be placed in moist sand to scour and toughen, and get rid of a pinky-brown discoloured patch which they have when first taken out of the offal. In this way they will keep fresh and in good order for several days. In the winter months, if it is desired to keep them for any considerable period, the plan commonly recommended is to put them into a large-mouthed bottle, such as a pickle jar, about two-thirds full of earth, the bottle being corked up and placed in a cellar or other cool situation.

The best way of baiting with gentles I generally find is to completely cover the shank of the hook with the first gentle run on longitudinally, then to put on transversely one, two, or three more according to the size of the hook, and the last one again longitudinally so as to cover the barb and point.

Carrion gentles, as they are called, are much smaller and proportionally nastier than liver gentles; they can be used, however, when the latter cannot be obtained, but the purpose to which they are most commonly put is that of ground-baiting. In all gentle-fishing it will be found a great convenience to have a bait-box, something in shape like a miniature water can, with a tray at the mouth into which the gentles are 'poured' instantly when required for baiting, and from which they at once fall back again into the can when done with. The can itself is attached to the button hole by a string.

Most authors mention paste. I find that the best paste is made from the crumb of a new loaf worked as follows: Place

the lump of crumb in a loosish 'bag' formed out of a pocket-handkerchief, draw the hand down the handkerchief until the bread-crumb is *lightly* pressed upon. Hold the bread, thus enclosed, in the water for a few seconds, then take it out and by twisting the handkerchief tightly squeeze out the superfluous water,—squeeze out, in fact, all the water that can be got out; then take out the sort of pudding which remains and work it a few times between the palms of the hands, which should be clean. This will form a reserve from which small portions can be taken from time to time to be manipulated into the desired consistency as required for use.

When putting a piece of paste on the hook roll it up between the finger and thumb until it is of a spherical shape, then bury the hook deeply in it and give it a slight squeeze between the finger and thumb; 'the sum tottle of the whole,' as Hume used to say, being that the point and bend of the hook are entirely covered and all but a very little bit of the shank.

Some roach fishers prefer to cover the whole of the hook, shank and all, with a pear-shaped piece of paste. This, however, requires some skill, takes somewhat more time, and makes the bait larger. All sorts of unguents and essences have been at one time or another recommended to be mixed with paste for the purpose of giving it a *haut-gout*.

> All arts, all shapes, the wily angler tries,
> To cloak his fraud, and tempt his finny prize:
> Their sight, their smell, he carefully explores,
> And blends the druggists' and the chymists' stores;
> Devising still, with fancy ever new,
> Pastes, oils, and unguents, of each scent and hue.

And in Jones's 'Oppian,' thus:

> A paste in luscious wine the captor steeps
> Mixed with the balmy tears that Myrrha weeps,
> Around the trap diffusive fragrance rolls,
> And calls with certain charms the finny shoals;
> They crowd the arch, and soon each joyful swain
> Finds nor his labour nor his care in vain.

Others again recommend the working up with it of a certain quantity of cotton wool to make it adhere longer to the hook. Honey is another addition which is often strongly advocated. I cannot say, however, that I have personally found any necessity for or advantage in these various refinements, and I am disposed to think that a good clean white bread paste made in the way that I have described will generally take, when fish are taking at all, at least as well as any other variation.

A sort of composite bait which has been recommended on really good authority is made by putting a gentle on the point of the hook and covering the rest of the shank with paste. Mr. Davies, the accomplished author of a charming book on 'Fishing in the Norfolk Broads,' states that in his experience a paste and gentle bait thus concocted has been known to kill where no success attended the use of paste alone.

Cheese paste—i.e. ordinary cheese worked up into a paste—is also a bait which has been recommended as deadly for carp and barbel. That it is so for chub—used with a float in the 'Nottingham style,' under boughs, &c., and in pellets about the size of a cherry—I can confidently assert, but I have not tried it myself for any other fish. The cheese I have used has also been always comparatively new, whereas to select a cheese that 'stinks' is the advice of experts.

There is, in fact, no end to the nostrums with which writers on fishing would complicate our bait-box. They almost all, however, depend, as pointed out in an amusing article by 'G. F.,' published in the 'Fisherman's Magazine,' some years ago, upon tittivating the olfactory fish nerves, and this again depends upon fish being possessed of the sense of smell, which may be assumed by analogy, but I don't think has ever been demonstrated ichthyologically. Admitting, however, that in fish as in man, the nose may be 'the sentinel of the stomach,' it is hard to believe that it could receive with pleasure such a compound as the following, recommended by M. Charras to Louis XIV., King of France, as an infallible 'anointment for fish bait:

Take of man's fat and cat's fat, of each half an ounce; mummy, finely powdered, three drams; cumium seed, finely powdered, one dram; distilled oil of aniseed and spike, of each six drops; civet, two grains; and campline, four grains: make an ointment according to art. When you angle with this, anoint 8 inches of line next the hook. Keep it in a pewter box, made something taper; and when you use it, never angle with less than two or three hairs next the hook; because if you angle with one hair it will not stick so well to the line.

Another of this author's prescriptions is gum ivy, also recommended by Izaak Walton. 'It is of a yellowish-red colour and with a strong scent and a sharp taste.' Or take this as 'the best unguent compounded for trout in muddy water and gudgeon in a clean stream:'

Take assafœtida, 3 drams; campline, 1 dram; Venice turpentine, 1 dram; put altogether with some drops of the chymical oils of lavender and chamomile, of each an equal quantity.

That a trout should be induced to partake of this precious compound in muddy water and gudgeon in clean water must surely be intended, as 'G. F.' suggests, to illustrate the disparity between the intellects of the two species. As a final effort of imagination it has actually been recommended to 'take the bones or skulls of a dead man at the opening of a grave and beat them into powder, putting this powder into the moss where you keep your worms, but others like the grave earth as well;' and 'man's fat' is not only insisted upon, but we are directed to apply to any 'surgeon' for it. 'Cat's fat' and 'that fat from a heron's leg' is likewise advocated. It has been pointed out that both the latter animals are partial to fish, and that although a cat has a proverbial aversion to wetting her feet she becomes a second otter when she has once taken to fish-poaching ways. But, as the writer I have been quoting from humorously remarks:

Man is not always fond of fishing, and the fat of a fellow who is no ossophagist might tend to drive the fish away rather than to

induce their presence, and if such be the case, we fear there will become a great demand for the adipose of an angler, and he who, in dying, carries so tempting a bait may be followed to his last resting-place by the brethren of the rod in a humour rather of joy than sorrow! This is certainly a grave view to take of the question, and naturally brings us to an end.

GREAVES.

Greaves, although strongly recommended by many authors, is to my mind a very unattractive, as well as inconvenient, sort of bait, so much so, in fact, that I 'hardly ever,' I might really say never, employ it. That fish whose character I have defended to the utmost from the aspersion of coarseness, shall not only be willing to swallow tallow in its normal and sufficiently nasty state, but should actually batten upon the fatty refuse of the unsavoury product, is a matter which viewed in its proper light ought to cause regret to the enthusiastic roach and barbel fisher. Here is the receipt, however, for the preparation of the greaves, 'such as they are:' The greaves, after being broken up with a hammer, should be gently boiled for about half an hour, long enough before they are wanted for use to admit of their getting cold and hard. The whitest pieces are the best, and these can be most conveniently disposed of to hide the hook by being cut into broadish strips or slices; but, as before observed, the whole thing as a process is unattractive and as a bait beastly!

It is refreshing to turn to—

'PITH' AND 'BULLOCK'S BRAINS,'

Which shine, at least, by contrast. As I have observed in the 'Modern Practical Angler,' this bait is a modern discovery, but it is the most deadly of all baits for chub fishing in winter. The 'pith' is used as the bait on the hook, and the brains for the ground-bait; and I shall therefore describe them both together. They are prepared thus:

Having obtained from a butcher some brains from a freshly

killed bullock, cow, or sheep, first thoroughly clean and mash them in cold water, and then boil them for fifteen minutes, changing the water once during the process. When cold they are ready for use.

The 'pith' is the spinal marrow of a bullock or cow, and should also be obtained quite fresh. The pith requires to be boiled for about three minutes to prepare it for use. The brains and marrow from one bullock will be sufficient for an ordinary day's fishing. In order to make the brains sink readily, and also in order to separate the particles, or make them fine, some fishing authorities recommend that the brains should be chewed by the angler as he uses them. This process, however, though effectual, is not relished by most persons, and the best substitute is to squeeze the brains in the hand whilst under water. The brains should be thrown in from time to time, in pieces about the size of a walnut, a few yards (according to stream and depth) above the spot which is covered by the bait.

The pith when used for chub or barbel should be cut up as required into pieces about the size of a large hazel nut, and baited on a No. 9 or 10 hook. (See plate, p. 207.)

The author of 'Spinning and Float-fishing in the Nottingham Style' is in favour of boiling the brains, but against boiling the pith. He says:

'It is, in my idea, the winter bait *par excellence* for chub: I allude to pith and brains. The pith is the spinal cord of a bullock; your butcher will draw you a piece out when you want to use it. The brains are used for ground-bait, and they must be washed perfectly clean and well scalded, or else boiled for a few minutes in a bag. They can then be cut up very small with a knife and thrown in. Don't, however, be extravagant in this matter; a very few pieces are quite sufficient. The pith itself when you first see it looks a very dirty and disagreeable affair; the pieces are about as thick as your forefinger, and I have had them a foot long. The skin must be slit from end to end with a pair of fine-pointed scissors, carefully pulled off, and thrown away, being useless. The pith must then be washed two or three times in clean water till it is perfectly clear from blood and all other impurities, and as white as card. Some anglers recommend that it should be scalded,

boiled, &c.; but I say don't be deluded into doing anything of the sort, for I have tried it, and boiling ever so little makes it very soft, and it won't stop on the hook at all. I say do nothing more to it than I have recommended above. After it is washed and clean it is ready for use, and for this bait a No. 4 hook is the best. Cut off a piece of pith about the size of a hazel nut and put the hook through and through it several times till you have worked the pith up the shank; it will then stop on the hook very well. When you have a bite with this bait play your fish very carefully, for I have found that two out of three of the fish so caught have only been hooked by the skin at the side of the mouth. This is a clinking bait to use in the depth of winter, when the snow lies deep on the ground, and when the thermometer indicates a few degrees below freezing point. Indeed, I think it is useless to try it unless there is a little frost.'

OTHER BAITS.

The white *larva* of the wasp, or wasp grub, which is found in the comb in a mummified (might I say com-atose?) state, is often a successful bait for roach, dace, chub, bream, &c. It is, however, difficult, from its delicate nature, to keep it very satisfactorily on the hook, and for this purpose some authors have recommended that it should be slightly baked before use, whilst others have considered that in order to 'snatch a grace beyond the reach of art' the head of the parbaked grub should be dipped in some red stain, or bullock's blood, if I remember the actual prescription rightly.

Wasp grubs are plentiful during the summer and early autumn months, and the only difficulty is how to become possessed of them without inviting attentions of a personal character from the bereaved progenitors. Having suffered many things, many times, myself in the process I will give a recipe for obtaining them, which is both simple and perfect. Having marked, during the day, the position of the wasp's nest—a level ground being preferable from choice—make up a sort of large squib of powdered sulphur and gunpowder in equal parts, thoroughly mixed up in a pestle with sufficient water to give it the consistency of thick paste. Roll the mixture up to the thick-

ness of a pencil and about six inches long in two or three folds of paper, which had better be tied or twisted at the end to prevent the contents escaping. At any time after nine or ten o'clock at night the whole of the adult wasps will be in their hole, and being provided with a fresh-cut sod in one hand the operator approaches the hole, and having carefully reconnoitred the orifice, lights his squib, and, as soon as it begins to fizz, pushes it down into the hole as far as he can and immediately covers it over with the sod—which he had better stand or, at least, trample upon. In five minutes every wasp in the nest will be dead or so stupefied as to be practically so, and the nest, which is usually from ½ foot to 1½ feet below the surface, and more or less in the shape of a plum pudding, can then be dug out entire with perfect safety, and the parts of the comb selected which contain the greatest number of grubs. So certain and expeditious is this process that I have taken three or four after dinner, dug them all up, taken what I wanted and filled in the holes in little over half an hour.

If wasps unduly swarm in the neighbourhood, which I have often known to be the case, they can, by following out the above directions, be easily reduced in numbers, if not almost entirely exterminated.

Grasshoppers, both sunk and floating, form an excellent bait for chub. I used to employ them successfully under some of the steep clay marl banks about Medmenham. In this case I managed somehow to make the bait sink, but at this moment I cannot exactly recollect the *modus operandi* adopted; my impression is that it was with a large shot nipped on to the tip of the hook shank, two or more grasshoppers, according to size, being stuck on below.

Caddis Bait.—The caddis-worm—the *larva* of species of the *Phryganidæ*, well known to the fly-fisher—is found in great abundance in some streams, and in others it is comparatively rare. In the streams where it is abundant, it probably forms a staple article of fish diet, and tends materially to keeping up a fine breed of trout. There are a great many varieties of caddis-

worm, from those inhabiting a plain straw-like case of from ½ inch to ¾ inch in length to those whose domiciles are patched together with small pieces of stone, sticks, and other *débris*. In order to be used as a bait, it is necessary that the caddis-worm should be induced to quit his habitation, and this is a matter of some delicacy and difficulty—one reason, perhaps, why the caddis-bait is not more commonly in use.

Meal Worms are often a capital bait for roach, dace, and many other fish. They are to be found amongst the refuse sweepings of the flour mills and are best preserved by being kept in a tin box with some of the meal in which they are bred. Mr. R. B. Marston recommends them to be used as a winter chub bait in combination with two wasp grubs, the meal worm being between the wasp grubs with the hook simply passed through the centre—laterally, not longitudinally. Both wasp grubs and meal worms are usually kept in stock for sale by Mr. C. Bradley, of 62 Jacob Street, Bradford, which are stated to be thoroughly 'well cured,' although how the process of curing is performed I know not.

Stewed Wheat is often to be commended as a bait under circumstances where paste and gentles might naturally be used. Mr. E. Tildesley, Secretary, Bordesley Waltonians, gives the following as the best recipe for its preparation: 'Put the wheat in a stew jar and just cover it with cold water; then place it on the oven side of the grate till it gets hot, when you will find the wheat begin to swell and absorb all the water; you will then keep adding water from time to time to keep the wheat covered for the space of six or seven hours, but on no account allow the water to more than simmer. By the end of that time the wheat will be swollen to its full size; the skin will be soft and all the flour retained.

'In baiting the hook merely press it in from the broken side right to the husk, and the chances are in favour of your hooking every roach, bream, chub, or dace that bites.'

GROUND-BAITING.

The object of ground-baiting is, of course, to collect the fish, either spread over a large area or roving about in shoals, to the spot at which it is intended to fish for them; and, having collected them, to keep them there as long as possible.

For this purpose it is not uncommon to bait, as it is termed, a pond or a river 'swim' the day previous, and even sometimes several days previous, to the actual fishing. The only danger is that the fish should be surfeited with food—or rather the special sort of food which it is proposed to tempt them with—before the intended feeding time arrives. In order partly to counteract this possibility, and partly also to induce them to prefer the bait on the hook to the ground bait, it is very usual to employ a coarser quality either of the same or a different bait for the purpose. For instance, if gentles are used in ground-baiting it is generally the carrion gentles already mentioned that are used—liver gentles, which are larger and probably more gustatory, being reserved for the hook. In paste-fishing again, especially in ponds, it is also a very good plan to throw in from time to time a few small pellets of paste round the float. The ground-bait actually used generally consists of bran and soaked bread mixed up together. In river-fishing, of course, this ground-bait would not answer as the stream would carry it away at once and with it probably even those fish which might otherwise have come to the fisherman's hook. When this ground-bait, therefore, is used in rivers it is very commonly mixed with a little clay, or else some flour meal or other more adhesive ingredient is added to give it consistency, and the ground-bait having been worked up into a ball a stone is pushed into the middle of it to carry it quickly to the bottom.

Lob-worms also make a good, perhaps the best, ground-bait for bream and barbel. The best way to use them is to enclose a handful or two in a large clay ball, taking care that a good many heads and tails stick out—*pour encourager les autres.* In baiting a Thames 'swim' for barbel as much as two or three

quarts, or more, of solid worms are employed—often for several days consecutively—for this purpose. The stream gradually washes away the clay balls and releases their contents.

Some good fishermen recommend that the worms for this purpose should be broken into two or three pieces ; I cannot say that I think the expedient one of any real advantage, whilst the preparatory process is disagreeable to say the least of it. In ponds, where small whole worms form one of the best ground baits for bream, perch, carp and tench, they do not, of course, require to be mixed with clay or any other substance.

Greaves, or 'scratchings,' are often employed in very much the same way as lob-worms, being mixed up with a certain proportion of clay to carry them to, and keep them at the bottom.

When carrion gentles are used and have to be kept any time beforehand, they should be mixed with moist sand, as in the mass, 'undiluted,' they are apt to 'scald,' as the expression is, that is they become hot so that a large proportion die. In combination either with bran and bread or with greaves, or all three, they form one of the best ground baits all the year round for dace, roach, and bleak, and are also very fairly good bait for bream or barbel. In ponds or still waters I know no better ground bait without any admixture whatever. It is not always, however, that carrion gentles can be procured, and under these circumstances bran and bread mixed (soaked, of course), squeezed into balls with the hand, and flung in round the float or where it is intended to fish, form the best substitute.

The tendency of fish to become satiated indicates a fact well worth remembering, namely, that in river 'swims' it is generally better to fish rather below than actually over or above the ground-bait, because by so doing, there is a greater chance of the unsatiated fish, which are working up stream to the ground-bait, coming into contact with the bait on the hook.

Brewer's Grains, or malt, that is the grain from which the beer has been made, is often recommended for purposes of

ground-baiting; but it is not a bait with which I can say I have ever had much success.

Boiled Rice is probably the best ground-bait for minnows, bran for bleak, and gentles for roach and dace. By only bearing this in mind much trouble will be saved in procuring supplies of live bait with the casting-net. A stillish curve or eddy of the river about two feet deep will be found the best description of water for the application of this principle of baiting and for using the casting-net effectually.

As a 'ground-bait' for perch, my friend, Mr. Jesse, informed me some years ago that a tolerably clear glass vessel filled with minnows, and with a wire covering over it, sunk to the bottom of a pond or river, proves a most enticing, and, of course, long-lasting ground-bait for fish. I can imagine that the exasperation of fruitlessly rubbing their noses against the bottle will make them go considerably for the real minnow when offered to them.

> Worse than Tantalus was their annoy
> To clip Elysium and to lack their joy.

Somebody else has lately written that a bottle of bright coloured flowers has a singularly seductive effect upon the fish-appetite, or curiosity, whichever it may be. Enthusiasts with more leisure than I have may perhaps be inclined to try the experiment. The bottle must, of course, be anchored in some way, and for the purpose might, perhaps, as well be filled with water, which would keep the flowers alive for a time at any rate.

To sum up: as a general rule—to which, of course, the above are exceptions—the *rationale* of ground-baiting is that the bait used on the ground should be of the same description as, but of inferior quality to that used on the hook.

Another hint. After ground-baiting for the next day, or a subsequent campaign, plumb the exact depth and have the tackle all ready arranged so that it may not be necessary to disturb the water when the fishing actually commences. No fish are likely to swallow the plummet and many may probably be scared by it.

THE PERCH. (*Perca fluviatilis.*)

Not a nibble has ruffled my cork,
It is vain in this river to search, then ;
I may wait till it's night
Without any bite,
And at *roost* time have never a *perch* then !—HOOD.

THE common perch is, to quote an old writer, both 'good fysheing and good eating,' and has an especial claim on the notice of the tyro as owing to his combined pluck and greediness he very frequently falls the first victim to their bow and spear. In fact, in many cases he requires hardly any art whatever to catch him, and, being a pond as well as a river fish, and spread pretty generally over the whole of Great Britain and Ireland, offers special facilities for being found. This distribution, however, although, as observed, very general, is by no means equal. In Wales, for example, the perch is almost rare and confined principally to stagnant waters. In Ireland it is more widely diffused but still somewhat unequally, and in Scotland, whilst very common south of the Firth of Forth, it becomes comparatively scarce to the north of it, and ceases entirely amongst the Sutherland and Ross-shire waters, or where observed is supposed to owe its introduction to very recent times.

Of the British perch, so far as my experience extends, the Thames produces the best in the matter of quality ; Windermere and Slapton Ley, the greatest show as to quantity ; and the Kennet, from Hungerford to Reading, the finest specimens for general size and weight. In this latter river, near Kettering, Mr. Francis Hughes and myself took on one occasion several dozen perch, averaging more than a full pound weight each, and the largest fish considerably exceeded two pounds. A few large

ones are to be found in the Hampshire Avon, where I once caught one weighing nearly 2¾ lbs. The numbers of perch existing in Windermere and Slapton Ley, Devonshire, are almost incredible ; but their size is insignificant, rarely passing a few inches, and more commonly being still less.

Even in the Thames, after the first flood has swept them into the eddies and mill tails, I have caught them literally as fast as I could drop in a paternoster. I remember once when fishing behind Temple Mills above Marlow, with Mr. Henry R. Francis and the late Tom Rosewell, we caught upwards of twelve dozen in this way, besides some jack, in a few hours on a late autumn or winter afternoon, and my remembrance is that we only stopped catching them for want of bait.

The perch of the Thames, which is also noticeable for its fine colouring, probably owes its superior gastronomic attractions to the great purity of the stream above the locks, as well as to the wide range in the choice of food, spawning-ground, &c., which it affords ; but in whatever waters the fish breeds, it is seldom other than palatable as well as wholesome, and it is on this account a frequent item in the invalid's dietary. Izaak Walton, indeed, mentions a German proverb which would give it a very high place as a comestible,—'More wholesome than a pearch o' Rhine,'—and quotes a learned authority to the effect that it possesses a small stone in the head thought to be very 'medicineable,' and which was at one time an ingredient in our Pharmacopœia.

The perch lives long out of water (resembling in that respect the carp and tench species), and if carried with care, and occasionally moistened, will in cold weather exist for several hours in this condition, not unfrequently undergoing a journey of thirty or forty miles without serious injury. Yarrell says that perch are constantly exhibited in the markets of Catholic countries, where they are a popular article of 'fast' diet ; and on these occasions, when not sold, they are taken back to the ponds from which they came, to be reproduced at another opportunity.

The best mode of 'transferring' perch, as well as carp and tench, which possess the same amphibious qualities in common, is to place them loosely among wet sedgy grass, in a coarse wicker basket, through the interstices of which the air can circulate freely. By this means specimens may be conveyed by fast train from London to Inverness, or for any similar journey, without injury, as Mr. Stoddart states, to their vital functions. The only precautions necessary to be observed are that they must not be too closely packed, that is, not too many between the same layers of wet grass, and that fresh water should be sprinkled over them every now and then to keep the consignment cool. As minnows are one of the most common and killing, perhaps the most killing, perch bait, it may be well to refer here to the instructions for carrying live baits given at pages 42–7, all of which are fully applicable to minnows. A dozen or two may, however, be carried in a common soda-water bottle for several hours by frequently changing the water; the bottle should not be more than three parts full. When the minnows begin to exhibit symptoms of distress, which is known by their rising to the surface of the water, it is a sign that a fresh supply is needful. In an emergency they may, however, be partially restored, without changing the water, by simply extracting the cork and shaking the contents of the bottle so that the water may be re-aerated. Another plan mentioned by Mr. Stoddart, who was an adept in minnow fishing for trout, was to carry them loosely wrapped up in well-wetted grass or moss in the corner of the fishing basket, by which expedient, the vitality more or less, and the consequent freshness of the minnows may be preserved throughout an entire day; and the same treatment will be found successful when applied to loach and sticklebacks.

I am not prepared to say that they will be as lively at the end of the day as when first put into the moss, but if care is taken to carry out the instructions given and sprinkle the moss or grass frequently, they will, at any rate, preserve a certain amount of vitality and freshness, which will fit them admirably for spinning.

But to return: such is the extraordinary hardiness and longevity of the perch, according to authorities, that there is one of the perch genus, *Perca scandens* or Climbing Perch, a native of several parts of the East, which not only travels over land, but actually ascends trees in pursuit of the crustaceans upon which it feeds, having been taken at an altitude of many feet from the ground.

The structure of this fish peculiarly fits it for the exercise of this remarkable instinct. Its gill covers are armed with a number of spines, by which, used as hands, it appears to suspend itself. Making its tail a lever, and standing, as it were, on the little spines of its anal fin, it endeavours to push itself upward through the interstices of the bark by the expansion of its body, closing at the same time its gill covers that they may not impede its progress; then, reaching a higher point, it opens them again. Thus, and by bending the spiny rays of its dorsal fins to right and left and fixing them in the bark, it continues its journey upwards. These 'travelling fish' are all more or less expressly equipped by nature for the purpose.

Whilst alluding to the late Mr. Stoddart, not only as a mighty fisher of trout, but also of salmon, it is pleasant to find that notwithstanding his almost unrivalled opportunities of satiating his tastes in this direction, he yet kept a warm corner of his heart for the humbler pursuits of float fishing and especially perch fishing by pond and lake.

There is a diversion, after its kind, he says, in watching for the dip of one's float, near the edge of a lake or pool, in which you have reason to know that perch are tolerably plentiful, and of a size, in the long run, worth capturing; diversion, sufficient at least; which will content and ever excite thousands among the Waltonian order of anglers; nay, to work upon the fancy, now and then, of the experienced slaughterer of trout and salmon. I admit, for my own part, under these circumstances, that I take special pleasure in a few hours' perch fishing. The variety itself is most acceptable; and many a time would I gladly exchange, on that score alone, a promising forenoon's sport on Tweed or Teviot for a quiet fling in Yetholm or Pasten Loch, two well-known preserves

situated at the foot of the Cheviots, the nearer of them being within an hour's drive of Kelso.

Indeed, notwithstanding the clamour against bait-fishing raised in certain quarters, I feel inclined to hold the opinion that diversity in one's sport gives a sustaining relish to every individual branch of it; and that an occasional indulgence, by way, as it were, of interlude, in the tamer and ruder, adds to the enjoyment of the more exciting and refined department. I have frequently also, amongst rod fishers of my acquaintance, adepts in trout and salmon slaying, noticed, that however much at starting they may affect, in the way of comparison, to despise the amusement of perch-fishing, they will quickly enter into the spirit of it, as a diversion, when the game is fairly set a-going, and evince by their keenness that, in the sudden dive of the float and the leisurely sailing out of the line, under conduct, now and then, of a two-pound fish, they experience a high measure of satisfaction.

Personally also I may say that I have satiated my soul with salmon slaughter (having once taken fifteen spring fish with the fly between breakfast and dinner), yet the prospect of a good day's float-fishing of any kind is always charming to me. There is no doubt, as Mr. Stoddart truly says, a fascination of its own in float-fishing, and of this the great majority of anglers numbering hundreds of thousands, scattered over the country, each and all 'brethren of the quill,' afford convincing proof. Many of these men have perhaps never had an opportunity of seeing a salmon or trout caught in their lives, but the 'enthusiastic patience,' to misapply the Queen's English, with which they stand for hour after hour watching the top of their tiny quill for the chance of a bite is simply splendid, and I am afraid I must in honesty add, to myself, incomprehensible. ''Ad e'er a bite, Jim?' 'No, I only cum here yesterday morning,' is a somewhat exaggerated, but not inapt expression of this long suffering and inexhaustible patience.

The clergy are great float-fishers as well as fly-fishers; fishing being one of the few sports which are now considered seemly in a parson, and some of the best performers in this way that I have ever come across have been 'sky-pilots,' as a nautical friend of mine calls them.

A story is told in a newspaper lately that a clergyman on his way to church on Sunday came upon two of his parishioners, lads, by the side of a pond, fishing. The good man, though himself a devotee of the gentle art, felt it due to his cloth to rebuke the 'Sabbath breakers.' 'Boys,' said he, sternly, 'do you know what day this is? Have you not been taught that it is a sin to——' At this point down went one of the floats with a jerk. 'Pull him up, pull him up,' shouted the parson, 'you young fool! Don't you see that you have got a bite?'

The excitement of the 'quivering quill' communicates itself apparently by a sort of magnetic attraction to the fisherman's four-footed companion. Dogs have been known to become so carried away by their feelings in watching the capture of a big fish that they have at last plunged headlong into the river with a sort of idea, it may be presumed, of being 'in at the death.'

A water spaniel belonging to the miller at Braemore, on the Avon, whose feats have also been chronicled by Mr. Buckland, was a wonderful performer and has been known to bring out a 2-lb. roach in his teeth. This unexpected interruption must have been very interesting, though, if frequently repeated, slightly unconducive to sport.

Some of the perch, however, which I have taken below Braemore Mill would prove a very awkward subject for the miller's water spaniel if he happened to get the spines in his mouth the wrong way upwards. The Avon perch are not numerous, but what there are are splendid, both as to colour and size, and some I have taken still lower down the Avon in Lord Normanton's water have averaged 4 lbs. a brace right through.

The size to which perch will attain is somewhat doubtful. The largest specimen that I ever remember to have met with was preserved in a small inn in Perthshire. It was very imperfectly stuffed, and had no doubt shrunk considerably in the operation; but the label stated that it weighed 7 lbs. when

caught, and from its appearance it certainly could not have weighed less than five or six.

Perch of 2 and 3 lbs. are by no means uncommon, and specimens of even 4 lbs. are probably less rare than may be supposed. Such fish have been taken in Pen Ponds, Richmond Park; and Pennant records the capture of a perch in the Serpentine which weighed 8 lbs., and Stoddart, in his 'Angler's Rambles,' one of 4 lbs. by Dr. Scott, in the Castle Loch, in 1858. Donovan speaks of a perch of 5 lbs., caught in Bala Lake. 'Ephemera' (the late Edward Fitzgibbon) mentions having seen a specimen which weighed 4 or 5 lbs. One of 6 lbs. was taken by Mr. Hunt, of Brades, Staffordshire, from the Birmingham Canal; and two fish of 8 lbs. each are stated to have been caught, the one in the Wiltshire Avon, and the other in Dagenham Reach, Essex. All the above, however, are capped by dear old Izaak, who says that he knew of one being taken by a friend, which measured two feet in length; and in the 'Sure Angler's Guide' he saw also the figure of a perch drawn in pencil on the door of a house near Oxford, which was twenty-nine inches long, and he was informed that it was the outline of a living fish.

It is not probable, however, that we know accurately what is the maximum weight attainable by the perch under favourable circumstances, even in British waters; and they probably reach a much greater weight in Scandinavia and other northern countries. The Danube breeds enormous perch; and Schäffer assures us that in the church of Lulea, Lapland, the head of one is preserved which is nearly a foot long, giving the entire length of the fish at something about $3\frac{1}{2}$ feet.

The annexed table of the comparative weights and measures of perch, which, with several other similar scales, was kindly furnished me by Mr. Charles Wright, of the Strand, may possibly be useful to the angler when unprovided with the means of weighing his fish. It will, Mr. Wright assures me, be found generally accurate when the fish are in season.

Length.	Weight.	Length.	Weight.
inches	lbs. ozs.	inches	lbs. ozs
9	12	18	3 5½
10	13¼	19	3 15¼
11	14¼	20	4 9½
12	1 0	21	5 5¼
13	1 4¼	22	6 2½
14	1 9¼	23	7 0½
15	1 14½	24	8 0¼
16	2 5½	25	8 15¾
17	2 13¼		

Next to the pike the perch may certainly claim precedence as the most dashing and fearless of all our sporting fish; often like the former fish following a bait up to the very surface of the water, or side of the boat, when he presents a really splendid appearance, the jaws open, the spines erect, and the whole creature instinct with energy and fire. On these occasions he frequently remains for several instants bristling like a porcupine, as if threatening reprisals on those who have presumed to balk him of his prey, retiring at length in sullen wrath with his face still turned towards his assailants.

I have seen, indeed, a whole string of perch following the bait one after another like so many shadows, and when they are really on the feed in this way it would not be an impossible feat to take every fish in the shoal; in fact, I believe that I have terally done so on several occasions, and I remember once a visit to the Avon, above Christchurch, where the perch lie mostly in holes easily fishable, after which I should not have much cared to fish the same water again for a year or two! These perch averaged from one to two pounds, and I once made a magnificent basket, the weight of which I do not exactly remember, but I think it must have been over 30 lbs., which I sent up as a present to the Piscatorial Society. They had, however, changed their headquarters, and, I believe, did not receive my consignment—rather unlucky for me, as it was the only occasion when I ever attempted to 'exhibit.'

Since I can remember anything I always remember reading in angling books that the perch was a 'bold biter.' This bold biting combined with his voracious appetite, constitutes, no doubt, from an angler's point of view, his principal charm. From the point of view of the minnow and other small fry whose misfortune it is to inhabit the same *locale* it presents itself no doubt in a different point of view.

To find half a dozen good sized minnows in the stomach of the perch is nothing out of the common, and failing these he takes kindly to insects, frogs, caterpillars, worms, and grubs of all sorts. The extent to which the perch will gorge himself with his favourite food may be illustrated by a fact which has come under the observation of many fishermen. When he has pouched so many minnows that his stomach positively refuses to contain any more he will endeavour to bite and, if possible, masticate others and under these circumstances I have repeatedly hooked and captured a perch by a minnow with the tails of the previous victims, which he had already swallowed and was unable to pouch, protruding from his gullet. When thus gorged he often ejects a portion of his prey on being landed.

A very singular, though I believe, not unparalleled instance of the voracity of the perch occurred to me when fishing in Windermere. In removing the hook from the jaws of the fish, one eye was accidentally displaced and remained adhering to it. Knowing the reparative capabilities of piscine organisation, I returned the maimed perch, which was too small for my basket, to the lake and, being somewhat scant of minnows, threw the line in again with the eye attached as bait,—there being no other of any description on the hook. The float disappeared almost instantly ; and on landing the new comer, it turned out to be the fish I had the moment before thrown in, and which had thus been actually caught by *his own eye.*

This incident proves, I think, conclusively, that the structure of cold blooded animals enables them to endure very severe injuries and wounds without experiencing material inconvenience ; a fact which may tend to remove any qualms of

conscience felt by anglers on the score of the sufferings supposed to be inflicted on their captives.

This incident appears on the face of it so very much like one of the flights of fancy of Baron Munchausen, that were it not that it took place in the presence of not less than half-a-dozen witnesses I should have hesitated to mention it. Singularly enough, one-eyed perch actually exist, are, I mean, bred with this deformity in several British waters. Mr. Stoddart, in his 'Angler's Rambles,' mentions that he himself caught a large number of perch having only one eye in Dunse Castle loch. 'On one of the four or five occasions,' says Mr. Stoddart, 'on which I fished here, I took out three dozen of perch exactly one half of which wanted an eye. How to account for such a contingency in so large a proportion remains to me a puzzle. The Rev. W. Crouder, of Dunse, was along with me at the same time and met with a similar experience. On a subsequent occasion in the same pond among four or five scores of perch taken I could only discover a single one-eyed specimen.'

With most of us, in fiction as well as in fact, one-eyed perch figure. We must all remember in Lord Lytton's charming romance 'My Novel,' how the half-starved Dr. Riccabocca fished daily for his one-eyed perch, although the novelist does not, if I remember rightly, crown his perseverance with eventual success.

An account of some totally blind perch and how they become so is given by Thomas Hurtley, in his description of the natural curiosities in the environs of Malham, near Craven, Yorkshire. The perch of Malham water, it appears, after a certain age become blind. A hard yellow film covers the whole surface of the eye, when the fish gradually acquires a black hue, yet these perch frequently attain the weight of 5 lbs., and are only to be taken with a net that sweeps the bottom, where they feed on loaches, miller's thumbs, &c.

Perch seem to be specially favoured in the matter of deformities, and Sir John Richardson has given us an interesting

account of some of them: 'A deformed variety of perch,' he says, 'with the back greatly elevated, the tail distorted, and bearing the local name of *Rudahorse*, was noticed by Linnæus at Fahlun, in Sweden; and similar monstrosities occur at Elgsjön in Ostrogothia, and in other lakes in the north of Europe. Deformed perch are also found in Glyn Raithlyn, in Merionethshire. Such a fish is figured in the volume of Daniel's 'Rural Sports,' devoted to fishing and shooting, p. 247. Perch almost entirely white inhabit the waters of particular soils; and I am indebted to the kindness of G. S. Foljambe, Esq., of Osberton, for specimens of a variety of perch from Ravenfield Park ponds, near Rotherham, in Yorkshire, the seat of Thomas Walker, Esq., which, when received in London, were of a uniform slate grey colour with a silvery tint; and this peculiarity of colour is retained when the living fish are transferred from the park ponds to other waters.

It would be easy to multiply such instances, indeed I myself took on one occasion several specimens of deformed perch in some ponds near New Brighton, Cheshire; and elsewhere they do not appear to be very uncommon.

To other fish of his own size the perch is a formidable foe, although, unlike the pike, whose gape stretches almost as that of a boa constrictor, his mouth is incapable of taking in anything much above bait size or of being used as a weapon of offence. In this particular, however, he has a unique advantage in regard to the spines with which his back fin is armed, as well as in the sharp long points of his gill covers.

How far the spines of the perch protect him from the assaults of the pike is not quite certain. In many fishings both in England and Scotland, small perch are considered the favourite baits of the pike, which does not seem to be at all deterred by their spiky appearance. Moreover, as the pike always swallows his prey head foremost, whilst the spines of the perch are capable only of projecting backwards—shutting down like the props of an umbrella, upon pressure from in front—it would not appear that they could impede the operation of

swallowing, but that, on the contrary, they would naturally rather assist it than otherwise—in the same way that the 'beard' of an ear of barley assists it in forcing a way up one's coat-sleeve.

The effect of these back-action *chevaux-de-frise* is curiously illustrated by a circumstance of not unfrequent occurrence in Sweden, and elsewhere, where pike and perch inhabit the same lakes. The perch swallow the trimmer baits, and then pike in their turn gorge the hooked perch. In this case, although the pike is seldom or never actually hooked, yet, on the fisherman's drawing in his line, the perch sets so fast in his throat that he is unable to get rid of it, and both are taken.

That the spines of the perch are very formidable weapons, of which they readily make use, is proved by an instance recently in a stock-pond near Weybridge, where one of these fish, of about half-a-pound, attacked a pike of the same weight, the result being that after a prolonged contest, carried on by both combatants with great fury, the pike was apparently either killed or stunned, and lay motionless on the bottom, belly uppermost. The Rev. Henry Francis, my informant, an enthusiastic naturalist as well as a most careful observer, was of opinion that perch themselves certainly do not object to these spines, so far as swallowing is concerned, and in a vivarium he has often observed them take with avidity smaller members both of their own and the ruffe species.

Here is rather a tall American story on this subject, which I lately read in the New York *Spirit of the Times* :—

Who will believe the statement? and yet we know it to be true. A two pound perch caught a bull-head in his mouth, in the Connecticut River, near Hartford, and the bull-head used his prongs to so good advantage that the black-fish could neither eat him, nor get away from him; and after a day or two the black-fish was found by the master of a sloop in that neighbourhood, entirely dead, with the bull-head or cat-fish sticking across his mouth—the bull-head being not only alive, but full of energy, and ready for another adventure.

The common stickleback, also a spine-armed fish, is in its turn constantly swallowed both by pike and perch; used for bait for perch where minnows cannot be got, it is best, however, to cut the spines off, and specimens of the brightest colour or red-throated are the most attractive. Although greedily taken by the larger perch and small pike, it is probable, notwithstanding, that the results of stickleback-swallowing, especially in cases of small pickerel and young perch, not unfrequently prove fatal to the latter. The sort of relationship existing between the two families is thus amusingly described by Dr. Badham, *à propos* of the pike:—

By old pikes, he says, sticklebacks are held in yet greater abomination than perch, and not without good reason, seeing the havoc they commit amongst young and unwary pickerels. It is only by personal suffering, that fish any more than men, ever buy wisdom; growing pikes no sooner begin to feel the cravings of hunger, and to find that they have large mouths, well furnished with teeth on purpose to cater for it, than they proceed to make a preliminary essay upon the smallest fish within reach; these are commonly the *gasterostei*, or sticklebacks, who, observing the gaping foe advance against them, prepare for the encounter by bristling up their spines in instinctive readiness to stick in his throat, instead, as he supposes, of going smoothly down into his stomach. This induces a dreadful choking disease, which we venture to call 'sticklebackitis,' by means whereof many a promising young jack is cut off *in cunabulis*.

'Piscator' alludes to this circumstance, and adds that as long as they are alive they keep their prickles standing 'erect,' 'for,' says he, 'if little, they are desperate and game to the last.'

If the pike is the tyrant of the water, the stickleback is certainly its knight-errant. Now, with sheathed weapons and glittering in green and purple, he tenderly woos the object of his devotion, or armed *cap-à-pie*, patrols a watchful sentinel before her nuptial bower. Now, he fiercely disputes with rival claimants the possession of a favourite nook, or bristling with spines, charges through the liquid plains in search of other

sticklebacks as pugnacious as, and more penetrable than himself.

Even in confinement the movements of sticklebacks are described by those who have watched them as being most warlike. When a few are first turned in, they swim about in a shoal, apparently exploring their new habitation. Suddenly one will take possession of a particular corner of the tub, or, as it will sometimes happen, of the bottom, and will instantly commence an attack on his companions; and if either of them ventures to oppose his sway, a regular and furious battle ensues. The two combatants swim round and round each other with the greatest rapidity, biting and endeavouring to pierce each other with their spines, which on these occasions are projected.

Contests of this sort frequently last several minutes before either will give way; and when one does submit, description can hardly exaggerate the vindictive fury of the conqueror, who, in the most persevering and unrelenting way, chases his rival from one part of the tub to another, until fairly exhausted with fatigue. The stickleback also uses his spines with such fatal effect, that one has been known during a battle absolutely to rip his opponent right open, so that he sank to the bottom and died.

Three or four parts of the tub are occasionally taken possession of by as many little tyrants, who guard their territories with strict vigilance; and the slightest invasion invariably brings on a battle. During these internecine combats, the colours of both belligerents frequently undergo a marked and extraordinary change, those of the victor becoming a deep crimson on the belly and green on the back, and the vanquished losing both his brilliancy and spirit together. These, it should be observed, are the habits of the male fish alone; the females are quite pacific—appear fat, as if full of roe—and never assume the brilliant colours of the male, by whom they are unmolested.

In a former essay on the 'Outlines of Ichthyology,' I alluded

to the remarkable clearness of fish sight. How exceedingly acute is this sense in the perch, an illustration, for the opportunity of witnessing which I am indebted to Mr. Bartlett, the eminent superintendent of the Zoological Gardens, Regent's Park, may be mentioned :—

In the large aquarium, which will be familiar to many of my readers, were placed two plate glass tanks, one containing a pike, and the other half-a-dozen perch. These fish took no notice of our entrance; and in order to show how supine they were to everything around, Mr. Bartlett directed the keeper to walk several times past their tanks, as if about to feed them. He did so, but failed to evoke the smallest symptom of interest or recognition. Mr. Bartlett then ordered him to walk *away* from them towards the cupboard where the net with which the baits were caught was kept, desiring me to observe the effect. The keeper accordingly crossed the room (about thirty feet wide) in the direction indicated, when instantly the stolid demeanour of the fish—both pike and perch—gave way to the most intense excitement. They rushed to and fro across their enclosures, straining their noses against the glass, erecting their fins, and exhibiting every token of agitation; and when the keeper, having taken the net, proceeded with it towards the bait-tank, the whole shoal fastened their eyes upon him, following every movement, and constantly veering round, as if under magnetic attraction, towards whichever part of the room he turned. I should mention that this occurred in the afternoon, the usual time of feeding being in the morning; but by Mr. Bartlett's direction, the feeding had on this occasion been postponed until my visit. It is, therefore, evident that these fish knew where the net was kept,—that the keeper was going to fetch it,—and that his doing so was a necessary preliminary to their being fed. These perch had been five, and the pike ten years in the Zoological Gardens, having increased in weight during that time a quarter of a pound and a pound and a half, respectively.

As may be gathered from the foregoing incident, perch are

by no means difficult to tame; Mr. Jesse succeeded, after a few days only, in inducing them to feed from his hand. Bloch mentions having watched them deposit their ova in a vessel kept in his own room; and I am informed that the perch of the Zoological Gardens, already referred to, increase their numbers by an annual shoal of young fry, which are hatched and reared under the eyes of hundreds of visitors.

A comical anecdote, turning upon this faculty of ready acclimatisation, is related by the author of 'Fishes and Fishing.' A country gentleman was anxious to induce a London friend to visit him, and knowing the latter to be a very keen angler, bethought him of adding the temptation of a 'day's fishing in his private water' to the usual attractions of a suburban villa. The bait took. A day was fixed; and, punctual to his appointment, arrived the sportsman, with the usual assortment of rods, reels, lines, &c. He was all impatient to be at his work; but his host persuaded him first to partake of luncheon; after which he introduced him to 'his water,' which proved to be an ornamental basin, in width about equal to the length of one of the rods the visitor had brought with him. The chagrin and disappointment of the latter may be imagined; but upon the assurance that there really were fish in the pond, he put his tackle together and adjusted a bait. It had hardly touched the water before he hooked and landed a fine perch; another and another followed, and by the time his friend came to summon him to dinner he had thirty-five fish in his basket.

'Well,' said the kind-hearted host; 'I am glad you have had such sport; I caused three dozen to be put in the day before yesterday.'

'Indeed,' replied the angler; 'then I will come back and catch the thirty-sixth after dinner.'

The spawning season of the perch is at the end of April or the beginning of May, and in a specimen of half-a-pound weight no less than 280,000 ova have been found. The ova are deposited in strings, which hang about amongst the weeds and rocks, and when seen through the sunlight, present the

appearance of glittering festoons of pearls. Perch spawn, at any rate when deposited in confinement, vivifies in from seven to seventeen days. This is the statement of James Tennant, keeper at the Zoological Gardens aquarium.

It was maintained by the ancients that the perch was self-productive; an opinion confirmed by Carolini and Valenciennes. In recent times the point has, however, been satisfactorily set at rest by the researches of M. Duffossé, extending over no less than 368 specimens of *Percidæ*. He not only proved them to be normally unisexual, but observed them depositing their ova, and at the same time casting their milt. Notwithstanding, therefore, Mr. Darwin's *dictum* against the structure of any animal being such as to insure self-fertilisation, it would seem that in this case there is every reasonable ground for supposing it to be so.

Though attaining their greatest perfection in clear, sharp streams, perch thrive well on clayey or sandy bottoms, preferring generally a water of a moderate depth and current, and frequenting holes, mill-dams, hollow banks, and in summer, the undercurrents of weirs. In winter their favourite haunts are backwaters and eddies; and at this time of the year they feed best about the middle of the day, more particularly if bright and warm. They usually go in large shoals, and in Lough Corrib and other places that I am acquainted with, it is customary to try and discover the position of the shoals in the lough before attempting to begin fishing. When the perch cease biting it is assumed that they have moved on to other grounds, and great efforts are made to keep on their track.

There is a small species of the perch family, and in appearance very much resembling it, called the ruffe or pope, which is very apt to be taken occasionally by the angler when in pursuit of other fish, and especially after raking for gudgeon. The distinctive mark between the perch and the ruffe consists in the back fin, which in the perch is in two clearly separated portions, and in the ruffe is joined into one. The ruffe also, though resembling the perch in most of its characteristics differs from it, in that it apparently thrives only in running waters,

at any rate I have never to my knowledge taken them in waters which are absolutely stagnant, though I once caught one under rather droll circumstances in a tributary of the Mole near Leatherhead, which long-continued drought had changed into a succession of small isolated pools.

When taking a 'constitutional' with some friends, a ruffe was perceived at the bottom of one of these pondlets, and something led to a discussion as to his 'catchableness.' The upshot was a small wager on my side that I would catch him there and then, though without rod, line, hook, or bait. The first was easily procured from a neighbouring hazel-bush; the second I manufactured out of the beard of my 'bettee;' the hook we extemporised with a pin borrowed from a passer-by; and the bait, a worm, was not long in being unearthed from under a fallen log. In less than five minutes from the time of making the bet, the diminutive specimen of *acerina* was lying on the bank—a victim to misplaced confidence and an empty larder.

The red worm is the most attractive bait for the ruffe. It is of no value to the sportsman, and seldom caught in sufficient quantities to be a matter of interest for the table. In length it rarely exceeds 4 or 5 inches; spawning about April, and depositing its eggs at the margin of the water amongst flags and rushes to which they adhere.

PERCH FISHING WITH THE PATERNOSTER.

The most killing bait for perch all the year round is, as I have stated, a live minnow, and of the several methods of fishing by which it can be used, the best is the paternoster; the other two being minnow-fishing with the float, and spinning.

The construction of the paternoster has been described at page 165. It is available under almost all circumstances when there is any chance of perch fishing being successfully pursued. It is most strictly however in its 'element' in deep holes, and under steep banks, in back-waters, eddies, and similar river

reaches, not too much acted upon by the current; also under such very rapid streams as mill tails, weir pools, and the like. The best time for fishing in the large, deep eddies or back waters is from October to January, as into these, especially after a flood, the perch are swept by the current. Such spots abound on the Thames and most large rivers, and I have mentioned already instances in which, with another rod to assist, I killed with the paternoster in such a backwater on the Thames some twelve dozen perch in a few hours.

For summer paternostering, on the contrary, weirs and rapids and rushes of water under which the perch congregate to scour and brace themselves after spawning will be found the best localities.

I used the word *under* advisedly, because the chance of employing the minnow and paternoster effectually in such positions is the dropping it through the rush of surface water and getting the minnows into the comparatively quiet undercurrents or back tows. It is not uncommon on the Thames, when using the paternoster, especially in winter, to add a third hook dressed on gimp and baited with gudgeon or small dace for the chance of coming across a jack, and this will be found a very good plan to adopt in waters where the latter fish are known to be abundant.

It remains to describe the *modus operandi* of paternostering. The rod should be a longish one and moderately pliant, (say such a spinning rod as is described at page 10, with the longest top) and the tackle arranged according to the instructions given as above, and baited with two minnows or small gudgeon, the leaded line should be dropped under the point of the rod or gently swung out into the spot it is desired to fish, and the lead allowed to rest on the bottom. The line between the lead and the point of the rod should always be kept 'taut,' in order that the bite, which is perceived only by the touch, may be more readily detected and the probability of hooking increased. When a bite is perceived the bait should not be pulled up immediately; on the contrary, it is better to drop the point of the rod slightly so as to slacken the line a very little,

and prevent the biter being prematurely pricked. After two or three preliminary twitches or nibbles a decided downward tug or pull will generally be experienced, and this is the moment for the fisherman to pull in return, which should not be done suddenly or in any degree striking-wise, but by a firm and steady upward movement of the rod. Should the bite be struck in the ordinary sense of the word, the effect is certain to be the loss of both baits as well as diminished probabilities of landing the perch.

The chances of hooking the fish are increased in proportion to the shortness of the line that can be employed, in other words, the smallness of the space between the point of the rod and the lead ; indeed, I always prefer, especially in swift water, where possible, to fish with the baits right under the rod point. It is not recommended to leave the bait too long in the same place. After it has been, say half a minute or so, stationary without any signs of a fish, it is better to shift the position somewhat, which can often be most conveniently done with the least disturbance of the fish or distress of the baits by shifting the lead from one place to another without taking it out of the water.

As in all other fishing the finer the tackle used the better, and it is recommended that at least two yards of carefully selected stained gut should be placed between the reel line and the lead. Some paternosterers advocate gimp as the material of the trace, and carry their theory out in practice, but surely gut, which is fit for heavy trout fishing, is strong enough to land a less game fish which very rarely exceeds 1½ or 2 lbs. in weight. The bait hooks should be so attached to the central link as to stand out as nearly as possible at right angles, to produce which result one of the simplest as well as most effective expedients is to attach the gut of the hook by an ordinary double half-hitch round the central link of the trace, taking care that the hook end of the gut is laid *upwards* when the knot is tied, and that the latter should be kept from slipping out of its position on a downward pull by one of the gut knots of the trace. The

lighter the lead that can be used having regard to the depth, current, and other circumstances, the better, and pear-shaped leads are preferable to bullets as they disturb the water less and are not so liable to catch in stones and stumps.

The paternoster is a very useful adjunct to all sorts of punt fishing, in places where pike and perch are pretty numerous. It may not only add to the creel, but, especially in roach or gudgeon fishing, its *hoc genus*, improve the chances of a good take of fish by ridding the immediate neighbourhood in an effectual manner of any pike or perch that may be roving about.

MINNOW FISHING WITH THE FLOAT,

or roving, is simply substituting a live minnow hooked through the upper lip for the worm or other ordinary bait. A hook one size smaller than that recommended for paternostering, say No. 7, is the best size, and with a fine gut line, No. 3 float, and an ordinary bottom rod that is not too limp, the angler will be well equipped for 'roving.' If roving is resorted to in rivers it must be only in eddies and backwaters where there is practically no current, or none to speak of, but it is best adapted for pond or lake fishing, as on Windermere for example, and other similar stretches of water, though even here I should myself give the preference to the paternoster until convinced by actual failure that it was unsuitable. In striking with this sort of tackle the fisherman should not be in too great a hurry. It is better to wait until the float disappears completely or sails leisurely and steadily away.

Spinning.—It sometimes happens both in lakes and rivers, that capital sport may be had with perch by using the spinning bait, whether natural or artificial. As regards the latter any of the small artificial baits which are used in spinning for trout may be adopted with success, and I have known a small spoon bait, in size between a sixpence and a shilling, to be exceedingly deadly when allowed to sink to the bottom of the water and drawn quickly up again towards the surface. This sort of

sink and draw will, in fact, often be found a most killing method of spinning for perch under all circumstances. With regard to the natural bait, although I have often caught large perch with the gudgeon, and sometimes even with small dace, when pike-spinning, the best bait will be found to be a good-sized minnow; and of methods of flights for spinning it, one



FIG. 1.—MINNOW-SPINNING FLIGHT FOR PERCH.



FIG. 2.—PERCH MINNOW-SPINNING FLIGHT BAITED.

or other of those described under the head of trout-fishing, in the first volume. If it is intended to make long casts with the minnow bait, or to trail it behind a boat, a lead and swivel, such as described for pike-spinning, page 83, must be added between the minnow and the running line, to prevent kinking. In the last two cases the bait should not be spun too rapidly, as the perch has not got the same dash and *élan* in pursuit of

his prey that the pike has, and if the bait is moving fast through the water, he is not unlikely to fail in his attempts to seize it.

This tackle, of which for the sake of convenience I repeat the diagram, is equally applicable to a very small gudgeon, loach, or large stickleback. Perhaps, as I have repeated the diagram, it may be convenient to repeat also the directions for baiting it :—

Fig. 1 is the flight of hooks, with a leaden sinker run on to the trace, but, of course, in baiting the minnow this has in the first instance to be slipped off altogether, by detaching the flight from the rest of the trace. Having attached a baiting-needle to the loop of the strand of gut on which the flight is tied, pass it in at the vent of the bait and out at its mouth. The baiting-needle is now taken off, and the leaden cap slipped over the gut into the position indicated in fig. 1, and pushed down the bait's throat until it occupies the position shown in fig. 2. The whole bait is then pressed, or pushed, downwards on to the triangle sufficiently to curve it, by a bending of the back, in the manner represented in the diagram (fig. 2). The 'nicks' or slices on the bottom part of the lead are made with a penknife for the purpose of keeping the lead in its place in the bait's throat and belly, but many spinners prefer it smooth, and it slips more easily down the bait's throat when 'unnicked.'

The trace consists of two or three yards of moderately fine salmon-gut, with a good sprinkling of swivels at convenient intervals (N.B. double swivels best) and attached to a very light dressed silk plaited running line.

The following is another good perch minnow-spinning tackle in streams, where the mode of employing it is by 'in and out,' or, more correctly, 'sink and raise' casts. In order to bait it, all that is necessary is to push the lead (fig. 1) down through the minnow's mouth into the belly, pass the lip-hook through both lips of the bait to close its mouth, and then insert one hook of the first triangle just below the back fin, so as, by aid of the lead inside, to crook the body of the bait as shown in fig. 2.

Where larger baits are used, a miniature edition of either of the spinning flights already recommended for pike-fishing will be found the most suitable. As a rule, however, spinning or perch across the ordinary current or channel of a river as

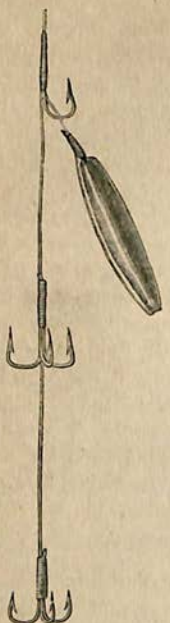


FIG. 1.



FIG. 2.

PERCH-SPINNING FLIGHT.

you would for pike does not succeed. There must be special natural features, such as deeps, eddies, back waters, and so forth, to give some probable indication of where the perch are most likely to congregate.

WITH THE WORM.

In rivers, ponds, and in lakes also, the worm is a universal and favourite perch bait, and is, of course, always obtainable,

whereas live minnows often are not. The tackle described for float-fishing with the live minnow, with a No. 6 hook, or '5' where the fish run small, and either No. 1 or No. 3 float is also best suited to worm fishing, and the best worms are brandlings, scoured as previously described at page 225.

There is no need to go into the details as to the 'where' of perch-fishing with the worm, inasmuch as it is applicable to all sorts and conditions of waters, running or stagnant, where the fish are to be found. In striking with the worm, as with the live minnow, it is better not to be in too great a hurry, but to let him fairly swallow the bait or run away with it, as when once he takes it into his mouth he is not, like the roach and dace, in the habit of quitting it again without some considerable provocation. It is well, however, not to leave the bite *too* long before striking, as, if allowed, the perch will frequently gorge or swallow it entirely, which occasions a loss of time and an unpleasant operation in extracting the hook.

The best general rule is to let the float be carried well under or away before striking. The stroke should be a gentle one, consisting of a sort of cross between a twitch and a jerk, and approximating as much to the pull as either. In rivers and streams the Nottingham style of fishing with the worm for perch will often be found the most killing, and in this case the bait should not actually touch or dribble along the bottom.

I cannot help fancying that the two-hook worm tackle recommended for trout-fishing would be found very suitable for ordinary pond and river fishing with the worm, whether for perch, tench, carp, or other fish. This is the result also of the few experiments I have had an opportunity of trying, by contrasting the two methods at the same time and place. I should be glad if any of my readers, with more available leisure than I now have, would give the two-hook system a trial. Its advantages are, of course, that the worm is presented to the fish alive, and in a natural, instead of dead or half-dead and in an unnatural position, and that the fisherman strikes immediately,

thus avoiding the chance, such as it is, of the bait being quitted by the fish after closer examination. I think in any fishing where it is especially desirable, as in the case of pond fishing for carp and tench, that the bait should actually lie on the bottom, that a great advantage ought to rest with the two-hook tackle, with which the worm would be able not only to present a life-like appearance to the fish, but actually to crawl about.

Perch, being gregarious, where one fish is brought to bank others frequently follow, and it is of the utmost moment, from the point of view of the basket, to make play while the sun shines, that is whilst the shoal remains within reach. In this respect, also, the two-hook tackle would possess a marked advantage, as it can be baited in half the time, or less, and, as observed, requires no interval before striking.

These shoals can frequently be perceived with the naked eye even in deepish lakes, when the water is calm and the eye can be brought close to the surface of the water; indeed, I have known oil put upon the water with the object of producing an artificial calm. Another plan is to look through a square lidless box with the bottom of plain window glass, the latter being immersed a few inches in the water. As success or failure frequently depends upon being able to 'spot' the wandering perch shoals, the above hints, which may at first sight appear fanciful, are worth remembering. I have sometimes thought of trying a telescope or opera-glass with the object end under water.

In Windermere I have often followed about these shoals from place to place—catching them all the time as fast as I could pull in the line—and I have noticed the shoals not unfrequently to consist of many hundreds. The Windermere perch, however, as a rule run very small; on Lough Corrib, on the contrary, where smaller shoals are to be met with, the fish often run from 1 lb. to 1½ lbs. or even occasionally to upwards of 2 lbs. Here, however, in consequence of the great depth of the water, it is sometimes better both to observe them and catch them at the surface than at the bottom, and

for this purpose a gaudy red fly dressed on a No. 9 or No. 10 hook or a spinning minnow is the most effective bait. The fly may be either trailed or cast. The former plan offering the best chance until the shoal is discovered and the latter afterwards.

The time for fly-fishing for perch is in bright hot weather and a dead calm, when all other fishing is at a standstill. In this way fly-fishing or spinning for perch may often come in very opportunely on an otherwise blank day, the weather suitable for perch being, as a rule, totally impracticable for either salmon or trout.

Principal characteristics of the Perch.—The whole length of the fish,—head, body, and tail-fin—being considered as one, the length of the head alone, to the point of the gill-cover, is about 3¼: depth of body at the deepest point as nearly as possible equal to length of head; nape of neck, and shoulder, rising very abruptly, giving a general appearance of the fish being rather 'hog-backed:' belly-line less convex. Fleshy portion of tail very slender. Tail-fin rather small. Two back-fins, the first supported by strong pointed bony rays fourteen in number; the second back-fin having sixteen soft rays, and commencing very nearly over the anal-fin: the commencement of the first dorsal, pectoral, and ventral fins, very nearly in a line, slanting slightly *backwards* towards the belly; and the pectoral-fin commencing a very little more forward than the point of gill-cover. Colour: muzzle dark brownish green; irides, cheeks, and gill-covers, a greenish bronze; pectoral-fins nearly yellow of a lightish tint; pectoral anal and tail fins, brilliant scarlet; second back-fin greenish, with a slight tint of scarlet or orange. Back dark olive green, becoming nearly brown in large specimens; sides golden yellow marked with dark transverse bars of a greenish colour: belly from muzzle to tail quite white. Scales in lateral line about sixty-six. Lateral line convex.

CARP[1] *AND TENCH.*[2]

Each yellow carp in scales bedropp'd with gold.
POPE'S *Windsor Forest.*

I prithee come dance me a reel, carp,
I prithee come dance me a reel,—
I thank you, my lord, I've no taste for your board,
You'd much better play to the eel.
The Cunning Carp and the Contented Knight.

IN the 'Whole Art of Fishing,' we are informed that 'a carp is a stately and very subtle fish called the Fresh-water Fox and Queen of Rivers,' and Randal Holme in his remarkable work, the 'Academie of Armory,' tells us that in Heraldry, 'the carp is the emblem of hospitality and denotes food and nourishment from the bearer to those in need.' By this same Randal Holme we are told how every sort of fish are named after their age and growth, and we learn that a carp is first a 'seizling,' then a 'sproll or sprale,' before it arrives at the full majesty of carphood. When arrived at its maturity it must be confessed by all who have given much attention to carp catching, that its intellect matures at least in an equal ratio with its body, indeed, I used to call my carp fishing expeditions 'carp bubbles,' to convey my feeling of the entirely illusory nature of the quest as appreciated by many and singular failures.

The well known Horatian motto, 'Carpe diem,' might, it has been suggested, without doing great violence to the original, be rendered 'Catch your carp to-day,'—that is if you can,—'for the cunning customer may not be inclined to give you a chance on the morrow.'[3] Its suspicious vigilance even

[1] *Cyprinus carpio.* [2] *Tinca vulgaris.*

[3] Notes on the Carp by Wm. Pinkerton, F.S.A., in *Fishing Gossip*, edited by H. Cholmondeley-Pennell. Adam and Chas. Black.

in eluding the fatal sweep of the seine net has been described by Vaniere, in his '*Predium Rusticum*,' thus translated :—

> Of all the fish that swim the watery mead,
> Not one in cunning can the carp exceed.
> Sometimes, when nets enclose the stream, she flies
> To hollow rocks, and there in secret lies ;
> Sometimes the surface of the water skims,
> And springing o'er the net undaunted swims ;
> Now motionless she lies beneath the flood,
> Holds by a weed, or deep into the mud
> Plunges her head, for fear against her will
> The nets should drag her and elude her skill ;
> Nay, not content with this, she oft will dive
> Beneath the net, and not alone contrive
> Means for her own escape ; but pity take
> On all her hapless brethren of the lake ;
> For rising, with her back she lifts the snares,
> And frees the captive with officious cares ;
> The little fry in safety swim away,
> And disappoint the nets of their expected prey.

The fact of the carp dodging the net has been so repeatedly borne testimony to, that, although not by any means inclined to be a *gobe-mouche* with regard to fish anecdotes and superstitions, I think it may be fairly accepted as substantially true. Indeed, the carp ought to be the cleverest as they possess the largest brain in proportion of any fresh-water fish, and the bones of the head are remarkable for their exquisite polish and symmetry. Fiction, if not fact, has, however, failed to credit the carp with the uncircumventible sagacity which is the theme of so many angling writers. In a curious old book, '*Dialogus Creaturam Moralizatus*,' published in 1480, it is recorded that at a red fish festival the carp and the grayling quarrelled on a point of precedence.

'I bask in the favour of the great and powerful,' said the carp, 'even man condescends to take care of me, and make ponds for my special use and protection.' 'But,' retorted the grayling, 'look at my elegant form and glittering scales, I

am much handsomer than you are.' The other fishes commencing to side with the contending parties, a scene of general strife seemed imminent, when the wily old trout restored peace to the company by saying—'Why should we all be disturbed by this ridiculous quarrel? Let the disputants go to Judge Dolphin, he is a wise and just fish, and will soon decide the question.' Accordingly the carp and the grayling went to the dolphin, and having laid the case before him, he said: 'My children, you place me in a very awkward position. I am bound to do you justice, but how can I, never having seen either of you before? While you have been residing in fresh-waters, I have all my life been rolling about in the restless waves of the ocean. Consequently I cannot give a conscientious opinion as to which is the best fish, without I first taste you.' So the dolphin incontinently snapped up the carp and the grayling, and swallowing them down his gullet, said :—

No one ought himself to commend,
Above all others, lest he offend.

It is curious, however, that although carp are exceedingly difficult to take with the rod and line, being altogether the most shy and difficult of capture of any species with which I am acquainted, they are, when in stew ponds and in confinement, one of the easiest of all to tame. They will come regularly to their meals, according to some authors, at the ringing of a bell or at the sound of their keeper's voice.

In Vol. IX. page 396, of the *Censura Literaria* there is an amusing ballad, from which the quotation at the head of this article is taken, commemorating the crafty character of the carp. It was written, according to the late Mr. William Pinkerton, by the Chief Justice Abbott, of Denton, in Kent, the seat of the late well-known literary antiquary, Sir Egerton Brydges, who is celebrated in it as the Knight of the Lake. Sir Egerton, though the House of Lords refused his claim, always alleged himself to be, *per legem terræ*, Baron Chandos, of Sudley, and a lineal descendant of the hero of romance, Sir Launcelot du Lac. The musical Lord of Pembury's board,

mentioned in the *jeu d'esprit*, cannot be now identified. As the song is completely buried from the notice of the general public, in the only place in which it appears in print, no apology can be required for introducing it to the reader :

THE CUNNING CARP AND THE CONTENTED KNIGHT.

To the tune of 'St. George and the Dragon.'

Within the wood a virgin ash
Had twenty summers seen ;
The elves and fairies marked it oft
As they tripped on the green !
But the woodman cut it with his axe,
He cruelly fell'd it down,
A rod to make for the Knight of the Lake,
A knight of no renown.
Turn and taper round, turner,
Turn and taper round,
For my line is of the grey palfrey's tail,
And it is slender and sound.
St. George he was for England,
St. Denis he was for France,
St. Patrick taught the Irishmen
To tune the merry harp,
At the bottom of this slimy pool
There lurks a crafty carp,
Were he at the bottom of my line,
How merrily he would dance.

In the Pacific Ocean
There dwelt a mighty whale,
And o'er the waves from London Town,
There went a noble sail,
With hooks and crooks, and ropes and boats,
'Twas furnished in and out,
Boat-steerers and bold harpooners,
With sailors brave and stout ;
The dart flew true and the monster slew,
The seamen blessed the day,
All from his fin a bone so thin,
At the top of my rod doth play.
St. George, &c.

Moulded and mixed in the magic mass,
The sun is below the hill,
O'er the dark water flits the bat,
Hoarse sounds the murmuring rill,
Slowly bends the willow's bough,
To the beetle's sullen tune;
And grim and red is the angry head
Of the archer in the moon.
Softly, softly, spread the spell,
Softly spread it around,
But name not the magic mixture
To mortal that breathes on ground.
St. George, &c.

The squire has tapped at the bower window,
The day is one hour old,
Thine armour assume, the work of the loom,
To defend thee from the cold.
The knight arose and donned his clothes,
For one hour old was the day,
His armour he took, his rod and his hook,
And his line of the palfrey grey.
He has brushed the dew from off the lawn,
He has taken the depth by the rule ;
Here is gentle to eat, come partake of the meat,
Sly tenant of the pool.
St. George, &c.

The carp peeped out from his reedy bed,
And forth he slyly crept,
But he liked not the look, for he saw the black hook,
So he turned his tail and slept.
There is a flower grows in the field,
Some call it a marigold-a,
And that which one fish would not take,
Another surely would-a !
And the knight had read in the books of the dead,
So the knight would not repine,
For they that cannot get carp, sir,
Upon tench may very well dine.
St. George, &c.

He has brushed the dew from the lawn again,
He hath taken the depth by the rule:
Here is boiled bean and pea, come breakfast with me,
Sly tenant of the pool.
The carp peeped forth from his reedy bed,
The carp peeped forth in time,
But he liked not the smell, so he cried fare ye well,
And he stuck his nose in the slime.
But the knight had read in the books of the dead,
And the knight did not repine;
For they that cannot get carp, sir,
Upon tench may very well dine.
St. George, &c.

Then up spoke the Lord of Penbury's board,
Well skilled in musical lore,
And he swore by himself, though cunning the elf,
He would charm him and draw him ashore.
The middle of day he chose for the play,
And he fiddled as in went the line;
But the carp kept his head in the reedy bed,
He chose not to dance nor to dine.
I prithee come dance me a reel, carp,
"I prithee come dance me a reel,—
I thank you, my lord, I've no taste for your board,
You'd much better play to the eel.
St. George he was for England,
St. Denis he was for France,
St. Patrick taught the Irishman
To tune the merry harp.
At the bottom of this slimy pool,
There lurks a crafty carp,
Were he at the bottom of my line,
How merrily he would dance.

Mr. Bradley, a great observer of fish, relates an instance of carp tameness:—'At Rotterdam, in a garden belonging to M. Eden, I had the pleasure,' he says, 'of seeing some carp fed, which were kept in a moat of considerable extent. The occasion of my seeing these creatures was chiefly to satisfy me that they were capable of hearing. The gentleman having

filled his pocket with spinach seed, conducted me to the side of the moat. We remained quiet for some time, the better to convince me that the fish would not come till he called them. At length he called in his usual way and immediately the fish gathered from all parts of the moat in such numbers that there was hardly room for them to lie by one another.'

The same sort of thing may be noticed in the waters of some public gardens near Rotterdam.

In these ponds the carp are also in the habit of following visitors about, in expectation of food; and one immense fellow, with a side as broad as a flitch of bacon, and an appetite that seemed insatiable, actually pursued us for nearly a hundred yards along the side of the bank until our stock of bread being exhausted, we were fain to try experiments with some paper pellets, when he sailed off in magnificent disgust. The fish must have weighed at least 15 lbs.

It is not to be supposed, however, from these instances, that carp are the only fish which are capable of being tamed, or are sensible to the influence of external sounds. At Sir J. Bowyer's, near Uxbridge, Mr. Bradley tells us, there is, or was, a pond full of tame pike, which could be called together at pleasure. Mr. Salter was acquainted with a person who for several years kept, in a waterbutt, a perch, which came to the surface for its food whenever the owner tapped on the side of the butt. According to Ælian, the chad was lured to its destruction by the sound of castanets. Professor Renni states that in Germany this fish is still taken by nets hung with rows of little bells arranged so as to chime in harmony; and, without going back to the story of Amphion and the Dolphins, or the old Scottish harper, who, according to the ballad, 'harped a fish out of the salt water,' we may find hundreds of well-authenticated anecdotes pointing to the conclusion that fish have a very considerable perception of external sounds. It is only fair to add that a number of striking experiments have been tried of late years upon the trout, which would appear to lead to an exactly opposite conclusion. Possibly the explanation may be

that some species of fish hear better than others, or that in some the sense of hearing is entirely undeveloped.

Tench, as well as carp, are a favourite stew pond fish, and the late Mr. Grantley Berkeley, who kept a number in a pond leading out of the Avon, near Ringwood, commended them highly for their edible, as well as for their eating qualities. I was so unlucky as not to be able to accept Mr. Berkeley's invitation to make a practical essay of one of these fatted tench at his hospitable table. But swimming about in the water they looked most majestic, much more golden-hued than the pond and river tench I have usually seen, and I can well imagine that, as he told me, when scientifically cooked they made a really excellent addition to the *cuisine*. How kindly both carp and tench take to their food when in confinement was noticed also by the late Mr. Edward Jesse, who mentions of some carp and tench that were kept by him, that 'they were soon reconciled to their situation, and ate boiled potatoes in considerable quantities; and the former seemed to have lost their original shyness, eating in my presence without any scruple.'

My experience agrees with Mr. Jesse's. I kept for more than a year in a vivarium three sturdy little fellows that would readily take anything I threw them, and almost out of my fingers. One of them afforded a good example of the 'hard dying' qualities of the species. He was 'killed' in the usual manner, and consigned with others to the cook, in whose care, however, after some hours, he began to show signs of revival. A kind-hearted damsel compassionately transferred him to the vivarium, where he afterwards throve, showing no effects of his narrow escape save a scar on the back of the head.

The carp is still more remarkable than the tench for its 'hard dying' qualities as well as its power of sustaining life for a long time out of water. I have more than once taken a basket of carp a considerable journey in the broiling heat of a July or August day with no more moisture than could be obtained from a damp cloth, and yet they have been alive, and

even lively at the end of it. The idiosyncracy is so well-known and acted upon that in Holland it is no uncommon practice to fatten carp for the table by hanging them in a cellar in a net full of moss kept damp, and feeding them, like great babies, on bread and milk poked into their mouths with a spoon.

The capacity of enduring this sort of amphibious existence is no doubt due to the construction of the fish's breathing apparatus, which is peculiar. The supports of the gill covers are *bony*; whilst in the perch they are formed partly of bone and partly of cartilage, and in the bream, barbel, and pike wholly of cartilage. The consequence is that instead of becoming stuck together when deprived of the moisture of the water, these gill covers, which represent the lungs of the fish, can be separated by the action of the muscles so as to absorb the oxygen from the air—in other words to breathe. In the carp also the gill-openings, which in the salmon and trout are equal in extent to the length of the gill-arches, are partially closed by a membrane, thus enabling them to retain moisture.

The secretary of the National Fish Culture Association lately tried the experiment of endeavouring to revive with brandy some carp which had been left eight hours out of water. Of this experiment the *Daily Telegraph* publishes an amusing account.

The actual facts, as may be found stated in the *Fish Culture Journal*, are these. Two Prussian carp were taken out of a tank of the South Kensington Aquarium and put into two separate dry cans, and one of the fish, to distinguish it from the other as a carp of temperate habits, was decorated with a piece of blue ribbon. They were left in their wretchedness until they were to all appearance quite dead, the teetotal fish succumbing half an hour after the other. To make sure of decease the corpses were left alone for four hours, after which they were both restored to their proper element, it was then obvious that the floating things were as thoroughly defunct as need be. The Secretary, being satisfied of this, then took out the fish without the ribbon—the Licensed Victualler we will call it—and gave it a dose of brandy with a feather, and put it back into the water. The effect was amazing,

for the carp in a very few minutes pulled itself together, and though a trifle groggy in its movements at first, began to swim about. Meanwhile the other—which for distinction's sake we may call the Teetotaller—continued dead, and, the experiment being considered complete, it was taken out of the water and thrown away. A dead carp, even though it may have died of excessive abstinence, is not worth much, at any rate not as a carp. About four hours later, however, it occurred to the Secretary that perhaps it was all pride on the part of the Teetotaller that made it go on being dead; that it would not commit itself to anything that might seem to countenance the tippling of its companion; that, in fact, it persisted in keeping its eyes shut to the important facts transpiring before it out of sheer obstinacy of principle. With this in his mind, the Secretary took up the representative of temperance and—we shudder as we write it—poured some brandy down its throat. There was no feather used this time. He simply opened the Teetotaller's mouth and let the spirits run down. The fish was then restored to the water for the second time, and for five minutes refused to confess that the brandy had done it any good. It floated helplessly on its side. All of a sudden, however, it thought better of it—a live toper is, after all, something better than a dead teetotaller—and wagged its tail. The motion was very feeble, a mere apology of a wag—a waggle; but, still, it was a beginning. Then it moved a fin, and then it gaped, and finally, turning itself right side uppermost, proceeded to swim. Both fish are now alive and well.

I have seen it stated, though I cannot say that I have met with an instance within my own knowledge,—that upon the drying up or exhaustion of a pond, the carp that were in it will bury themselves deep below the surface of the mud, and re-appear like the celebrated mud-fish of Ceylon in undiminished numbers upon the first return of the water. An instance of this was recently stated in a contemporary to have happened in the case of a dried up pond at Filly, near Norwich, and I accordingly wrote to the Rev. Edward Gillet (the gentleman upon whose authority the circumstance was narrated) to ask him to be so good as to inform me of the real facts of the case. The following is his reply:

Sir,—I have great pleasure in answering your enquiries about the carp in the pond. Let me begin by correcting an error into which the writer of the paragraph in the *Field* has fallen. The pond is in the parish of Great Ormesby, otherwise Ormesby St. Margaret, and not two miles distant from Filly. There were seven carp, weighing (by estimation) from a ¼ lb. to 6 ozs. each. They were found on emptying out the pond.

The pond containing about 32 rods—rather less than a ¼ of an acre—only contained about 4 rods of water—the rest was mud, and had been nearly dry, at least six weeks, on the surface, so that ducks could walk on it, when the mud was taken out, all except the upper part of about a foot in depth was somewhat liquid, the upper foot had consistence enough to retain its shape. About 450 cubic yards were taken out of the pond. The holes in which the fish were—three in number—4 fish in one hole, 2 in another, and 1 in another, were not exactly circular, but an irregular oval shape, about 4 in. by 3 in.; they varied in depth from 18 in. to 2 ft. 3 in. There was water in each hole and I have no doubt from the effect of the spring, there would have been water for months to come. It leaves the question of fish becoming torpid in mud exactly where it was. All that surprises me is that the gas from the mud did not kill the fish. I shall be most happy to answer any enquiries about this case. I am, &c.,

EDW. GILLET.

Vicarage, Runham, Filly, Norwich,
Nov. 30, 1864.

The splendid colour of the scales of the carp when in high season has been graphically described in the quotation heading this article as 'bedropped with gold,' and probably, as Mr. Pinkerton suggests, that may have been one of the causes which led to the carp (alone amongst all fresh water fish) attaining to mythical honours. The story which is given by Vanière describes how Saturn flying from Jupiter, came to a wide lake. With Carpus, the master of it, he made a compact for a free ferry across, but tempted by the love of lucre he would have made a prisoner of his passenger had not the god perceived his treachery in his face and turned the traitor and his crew into fish, which, however, still follow after sailing ships in hope of 'golden fragments:'—

The carp which in the Italian seas was bred,
With shining scraps of yellow gold is fed;
Though changed his form, his avarice remains,
And in his breast the love of lucre reigns.

Of the groups composing the carp family generally, some are to be found in greater or less abundance throughout almost all the warm and temperate parts of the globe, India and China producing the greatest variety, and Germany the greatest number of particular species under notice. Austria and Prussia especially abound with carp, which form a staple commodity of traffic; and in such request are fresh water fish as articles of food in parts of these countries, that according to Yarrell, an acre of water will let for as high a rent as an acre of land. The carp is an inhabitant also of most of the rivers and lakes of Russia and Eastern Siberia: and Valencinus states that it thrives and reaches to an extraordinary size in the Caspian.

The common carp is so well known to most fishermen and others as hardly to require description. It exists, either in ponds or rivers, in tolerably equal distribution throughout the whole of the counties of England, and in some of those of Ireland and Scotland, where, however, the water appears less suited to it.

Although the carp is not unfrequently found in rivers, yet stagnant water appears to be its natural element, and in ponds it breeds fastest and reaches its greatest size. Large carp are occasionally taken in the Thames; and in some of its tributaries the fish is also found in tolerable abundance, and of heavy weight: of these, the Wey in Surrey contains probably the finest specimens, though I believe they are rarely caught.

Of all fish, the carp family generally are, perhaps, the least carnivorous; and, indeed, their teeth, which are placed in the throat, are entirely unsuited for purposes of seizing or retaining prey. Their food consists of soft vegetable substances, insects, and occasionally of worms or grubs. Mud is often found in

their stomachs, having been swallowed, it may be, on account of the minute worms or other animal matters it contains.

The crowns, or upper surfaces, of the teeth of carp are furrowed, and altogether present a very similar appearance to those of ruminating animals. These teeth masticate the food by working against a gristly plate in the roof of the throat, in front of which will be found the soft fleshy mass, commonly known as 'carp's tongue;' the real tongue, however, is placed as usual between the limbs of the mandible, and is small and inconspicuous.

Besides the singularity already noticed in the interior supports or gill leaves of the carp, which enables it to survive lengthened exposure, the air bladder is also remarkable for its size, and is double, being divided by a short narrow neck or necks into two or more chambers.

We have at least three varieties of the carp family, besides *Cyprinus carpio*, more or less acclimatised in this country. The Crucian, or German carp (*Cyprinus carassius*), the Prussian, or gibel carp (*Cyprinus gibelio*), and the gold carp—the common gold and silver fish of the aquaria (*Cyprinus auratus*). The last three are probably introduced species into this country, and are hardly sufficiently common or widely distributed to form important items in our list of sporting fish. The shape both of the Prussian and Crucian carp differs materially from that of the common carp, being, in fact, broader and flatter and altogether more 'bream-like' in appearance. In colour, also, they are both of a much paler gold, especially at the sides. The Crucian carp again differs from the Prussian carp in the shape of its head, the head of the Prussian carp being much rounder and more 'chub-like,' and the depth of the body, though still exceeding that of the carp, being less remarkable.

Indeed, the Prussian carp bears externally considerable resemblance to the gold fish, whilst the Crucian carp more distinctly reminds one of the bream. The Crucian carp is the rarer species of the two, and has never, according to Yarrell, been taken except in the Thames between Hammersmith and Windsor. I

believe, however, that it exists in some ponds in Surrey, and that I have repeatedly caught it in a small piece of water on Putney Heath, locally called 'Elgin's Pond.' Having no specimen of the fish preserved, I would not state this as a positive fact, but to the best of my memory, the fish I caught, which were either Crucian or Prussian, resembled more the former than the latter. They never much exceed a pound in weight.

The Prussian carp is found in several counties in England and probably exists in many others where it has not hitherto been noticed. In their *habitats* and generally in their food, spawning times, &c., the Prussian and Crucian carp resemble the common carp. They are not bold biters, and though, perhaps, not quite so difficult to catch as *Cyprinus carpio*, seldom afford any great sport to the angler. The best bait for them is a small well-scoured red-worm.

The common carp, which is extraordinarily prolific, insomuch that 600,000 eggs have been counted by Bloch in a single specimen weighing 9 lbs., spawns generally towards the end of May or beginning of June according to the temperature of the water and the nature of the season. It is supposed to continue spawning occasionally for four or five months, the eggs being deposited upon weeds amongst which the female is followed by several males, thus securing the impregnation of a very large proportion of the eggs. It is in season for the table from October to April.

Although the carp is in its *habitats* more strictly a pond than a river fish, it is not unfrequently found in running streams, though, under these circumstances, it probably never reaches the same size as in ponds and stagnant waters.

The largest carp recorded as being taken in England does not appear to have exceeded 22 lbs. It was taken in 1836 in the county of Surrey, famed of old for its large carp, and was exhibited by the late Mr. Yarrell at a meeting of the Zoological Society. This carp was netted in a piece of water called the Mere, at Penn's Hill, and in length was 30 in., having a girth at the commencement of the dorsal fin of 24 in. This carp

belonged to the well-known naturalist, Mr. Edward Jesse, and Mr. Yarrell observed 'that he could find no record of any carp so large having been before taken in this country.'

A brace weighing 38 lbs. was sent by Mr. Ladbroke, from his park at Gatton, Surrey, to Lord Egremont, as challenge-specimens to compare with the carp of Sussex. A carp is mentioned as having been taken from a piece of water at Stourhead in 1793, which was 30 inches long, upwards of 22 inches in girth, and weighed 18 lbs. At Weston Hall, Staffordshire, the seat of the Earl of Bradford, is preserved the painting of another which weighed 19½ lbs.; and in the large lake in Wimbledon Park, I took on one occasion with a landing-net, a specimen weighing upwards of 19 lbs. These are a few large fish that happen to have been chronicled from English waters; but I am convinced that many much larger ones have been taken.

Comparative Lengths and Weights of Carp.

Length.	Weight.	Length.	Weight.
inches	lbs. ozs.	inches	lbs. ozs.
9	7¾	20	5 5¼
10	11	21	6 2¾
11	14¾	22	7 1¼
12	1 2½	23	8 1¾
13	1 8¼	24	9 3½
14	1 14½	25	10 6¾
15	2 4	26	11 11
16	2 11½	27	13 2
17	3 4½	28	14 10
18	3 14½	29	15 4
19	4 9	30	16 0

The growth rate of carp has been approximately computed at 3 lbs. during the first six years, and 6 lbs. before the tenth year. They grow much faster, however, in warm climates, and also probably in stews when well fed. The following is recommended as a recipe for fattening them:—'Barley meal, half a gallon; chalk, in powder, 1½ lbs. (very clean); clay, a sufficient quantity to make a stiff paste. Place this in the stew or pond,

in a net (of not too small meshes) suspended about a foot from the bottom. When all is sucked away but the clay, put fresh in the net or nets.'

This recipe is said to have been used by the old monks; but the chronicler adds, 'Now, how the carp are to suck away the barley meal and chalk leaving the clay behind, appears difficult to understand.' This seems a pertinent question. Probably wheaten or other flour would be a better ingredient.

A hundred—a hundred and fifty—even two hundred have been stated as the number of years attained by the carp under the most favourable circumstances. Supposing, however, that this should be an exaggeration, there is no doubt that many of the fish which were introduced into the ponds at Versailles, &c., in the reign of Louis XIV. (say 1690), are either still living, or were so a very short time before the Revolution of 1830. Dr. Smith, in his 'Tour to the Continent,' mentions them, and observes that they had grown white through age, a fact partially confirmed by my friend, Mr. R. W. Stuart, who recently visited and fed the historic carp. Mr. Stuart noticed that although not entirely white, so far as his observation extended, many of these fish had a large white spot or scar on the top of their heads—a sort of equivalent to baldness in the human subject, he considered it.

A reviewer in the *Athenæum* of August 8, 1863, gives the following comical account of the Fontainbleu carp :—

Visitors to Fontainbleu will doubtless remember the lake adjoining the palace and its large carp population, numbering many of the most ancient of the family in Europe. To those who have never been at Fontainbleu, we may state that the lake swarms with these fish, of all ages and sizes, and that it is the custom of visitors to feed them with bread; but as ordinary bread would disappear in a moment amongst the hungry shoal, a plan has been devised to give the visitors more amusement by using balls of bread, about the size of a man's fist, baked to biscuit-like hardness.

On casting one of these balls into the lake, it is immediately surrounded by scores of carp, hungry youngsters for the most

part, who being apparently aware that they cannot possibly devour the food in hard and unbroken condition, proceed with wonderful unanimity to push it with their snouts to the nearest part of the stone wall confining the lake. Against this they continue butting it violently, until at length the repeated blows, and the softening effect of the water, cause the ball to break; when, just at the moment that it is in a fit state to be eaten, some half dozen enormous carp, white with age, who have been watching the proceedings with evident interest, shoulder away the young workers, who retire with great precipitation, while the tyrants of the lake gobble or rather suck in the pabulum which has cost the small carp so much trouble to render fit for their eating. It is the old story of might against right, and as we have often witnessed what we have described, we have no doubt that old carp are as wily as ancient foxes.

This gentleman, it will be observed, confirms Dr. Smith's statement as to carp becoming gradually white from old age; and it is a curious fact that great age and exclusion from the light produce apparently the same effects both on fish and other animals—the skin or scales undergoing a sort of bleaching process, either from a gradual drying up of the invigorating juices of the body, or from want of the sun's rays.

In the case of fish and reptiles whitened by exclusion from the light, it is an almost universal rule that the eyes are so much undeveloped as to produce total blindness. The fish taken in the Mammoth Caves of Kentucky are blind, and of a white colourless hue, as also is a species of crawfish found in the same subterranean waters. The *Proteus anguinus*, inhabiting the caves of Illyria, exhibits the same peculiarities. This singular creature, which is apparently a link between the reptile and the fish, presents in every respect the appearance of a blind pinky-white eel, with four very thin eft-like legs near the head and tail. When swimming, these legs fold back against the sides, and they appear to answer no purpose except that of balancing the animal when at rest on the ground. The specimen which I examined was about a foot long, and was brought by a gentleman from the cave of Adelsberg, near Trieste. Its lungs or

gills were double, one pair being on the inside and one on the outside of the neck; but I could not discover that it ever came to the surface of the water to breathe; it appeared to sleep constantly; and its motion in swimming, when disturbed, was exactly like that of an eel. It was always necessary to keep it covered up, as upon lengthened exposure to light its life and its colour ebbed away together.

It is probable that during the winter months carp retire almost wholly into the mud, or under roots, hollows, and weeds, and at this time they are hardly ever to be taken with a bait. In the summer they frequently lie sucking in the weeds, in a sort of lazy state, each 'suck' making a very distinct and unmistakable noise. It very much resembles the sound made by a pig, to which animal, indeed, a big carp has always appeared to me to bear a striking likeness, both in face and character. When not sucking or basking, the carp usually swims about in shoals near the surface of the water, returning to the bottom to feed.

Early in the morning, and, occasionally, late in the evening, are the best times for fishing; but, as observed, the catching of carp with the rod and line is always a difficult and uncertain operation, particularly if the fish are large. The smaller the pond, the better the chance I have always found of catching carp and tench, though, of course, they are not so large as in bigger waters. I once caught half a bucketful of carp before breakfast, in a pond by the side of a road between Weybridge and Byfleet, which was not bigger than an ordinary sized ball-room. The biggest of these carp did not, however, exceed 2 lbs. in weight.

The following is the method of carp fishing in stagnant waters which I have found most successful:—

Let the line be entirely of medium sized or fine round gut—clouded, if possible—with a very light quill float, say, No. 4, and one good sized shot, about six inches or so from the hook, which should be No. 5 or 6 and baited with a brandling or red worm. Plumb the depth accurately; and arrange the distance

between the float and the shot, so that the latter may exactly rest *on the bottom*, weighing down the point of the float to about 'half-cock,' and letting the gut below the shot and the bait lie on the ground. Fix the rod in the bank and keep perfectly quiet. When a bite is perceived, do not strike until the float begins to move away.

It constantly happens, however, that the carp will not be taken either by this or any other mode of fishing with which I am acquainted; but if he is to be caught at all it is thus.

The baits are, worms (first), gentles, greaves, grains and various sorts of pastes, of which latter, however, I believe, the plain white bread crumb paste is the best, as well as the most easily made. Professor Owen, who had a good deal of carp fishing experience in Virginia Water, gave me the results of his practice which concur in a great measure with my own, except that he fished with his bait paste made of soft herring roe worked up with bread crumbs and wool, a favourable substitute sometimes for the brandling.

Of all the curious as well as unsavoury morsels which have been advocated at one time or another, as baits for carp I think coagulated sheep's or bullock's blood is about the most nauseous, yet it is not many weeks ago since this was gravely recommended by a writer in a sporting contemporary.

I was, he says, a resident at Frankfort-on-the-Maine in which river the carp, in the vicinity of the city, were plentiful. After trying many baits in vain, I bethought me of one I had seen used in Paris by the Lutetian cockneys, and found it successful. I got from the slaughterhouse—then situated in the Dom Platz—a tin canister full of blood; whether of sheep, oxen, or goats, or all intermingled, I cannot say. With this coagulated gore I was able, after some practice, to bait my hook. The baiting was, of course, very frequent. The hook had to be let down very gently, and the bait would melt off after a few minutes' immersion. Every bite which did not result in a catch also necessitated re-baiting. But I caught a good many carp. I presume that in a river which flows pretty rapidly, as does the Maine, these fish do not, as a rule, attain to such a size as those in ponds. With me they used to run

from 1 lb. to 4 lbs., but generally between 2 and 3 lbs., which seemed to be the average weight of those caught in nets in the same localities. I daresay you have often seen anglers using blood as bait on the quays in Paris. I was a youngster when I fished with it, and do not think I should care to try it now. It is not pleasant to handle, and is apt, in summer, to become smelly on the least provocation. But in those days, wherever there was water I was bound to fish, and I shirked no nastiness short, perhaps, of holding in my mouth worrums for bait.

Any of the before-mentioned baits—either simply or mixed with clay, or bran, or both, according to the nature of the pond or current—will form a good ground bait, which should be thrown in *overnight* on the spot where it is intended to fish. A few gentles or bits of chewed bread, occasionally added when fishing, are generally advantageous.

À propos of ground baiting for tench, Mr. R. House, writing lately to the *Fishing Gazette*, mentions the following facts under the head of 'Necessity of Judicious Ground Baiting':—

Sir,—You are quite right about tench taking paste or boiled potatoes (provided they have been fed with them beforehand); but the feeding is the secret! For instance, a few years ago, a friend asked me to fish his trout preserve, where he had scarcely ever before allowed any one to fish. I tried with my spinner, and in two hours had eleven trout, none under 2 lbs.; but he told me there was one that never would take minnow or worm—he was lying at the back of the premises where the garbage was thrown. I asked the cook what she gave him; she said she often threw him out bread. I cut a piece of bread, and threw it in, and he took it in a minute—near 6 lbs.

I also know of a case at Newbury, where a splendid trout fed, and no one could entice him to take their bait; but at the last, the cook said that whatever was thrown out—cabbage or potatoes—he took it. My friend took a small potato, boiled, and with a large hook nailed him—11 lbs.—I am, &c.

It is curious that this ground baiting should have been practised more than sixteen hundred years ago; it is described by Oppian, who says that the paste was made with scented

cheese and flour, which was divided into little pellets and scattered in by the fishermen to attract the fish.

A *quondam* writer in the *Field* gives, under the signature of 'Eothen' his experience in Indian carp-catching :

This fish is known in the Deccan, he says, as the *komlah*. It exists in great numbers in most of the rivers, and attains a considerable weight, from 10 lbs. to 40 lbs. They are often fed by pilgrims near the steps leading down from temples to the water-side, and in such places they become very tame and bold, almost tumbling against the legs of natives performing their ablutions in the river. If handfuls of dried earth nuts in the pod are thrown in, they will scramble for them with the utmost eagerness, rolling over each other like porpoises, great fellows, with broad backs, averaging 25 lbs., a sight to see, I can assure you ! But, flourish a rod for five minutes, and they will be off with a rush ; not a fin will be seen near the place again for at least half-an-hour. No ! they have a marvellous discrimination between friends and foes ; and why it should be so I never could understand, because it is only at rare intervals that they are fished for, by some wandering civilian or officer from the distant cantonment.

Under these circumstances the only feasible plan of circumventing them that I could discover, was to trail my rod to the water's edge and lay it down on the ground. I baited the hook with a good-sized lump of plain paste, and then, holding this ready, I threw in several handfuls of boiled rice, mixed with the dâl. The water would soon be in a boil with the fish greedily feeding at the bottom, and then was the time to drop in the baited hook, which in the general scramble was sure to be bolted, or, at any rate, laid hold of. In the meantime, I had darted back and picked up the rod, and if I was lucky enough to make a successful strike—not by any means an easy thing under the circumstances—there would be a 'whirl' and an 80 yards run before there would be any display of the butt.

These fish were wonderfully powerful and active, and as the river there was broad and deep, it was necessary to have at least 50 yards of line. I was put up to this dodge by a military friend who had been very successful. The largest fish of his capturing that I saw, weighed 36 lbs., and it was truly a noble fellow, short, but exceedingly broad and deep at the shoulder. The scales are silvery, not yellow, and remarkably large—one would quite cover

the palm of a man's hand. I wish I had brought some home for display in the *Field* window. Since I left India, I met an officer who is a mighty sportsman in every branch, and he told me that he had fished with great success in the very same river, but in another manner. In the evening he would watch for the rise of a single fish, and then, by an underhand cast, he would drop his hook, baited with a bean of green grain, just within the curl of water, when it was generally snapped at. Of course, if the first cast failed there was no use in making a second; and, indeed, I think few men but himself could have made an underhand cast with the requisite nicety and precision. However, my friend threw with such success, that in seventeen days he killed 70 fish weighing 1,200 lbs.

A singular expedient for catching carp is suggested by Mr. Fitzgibbon in his 'Notes to Walton':—

A correspondent, he says, not long since wrote to me for advice. He had a pond in which were many large carp; and although he had angled for them in due season from February to October during seven years, he had not succeeded in capturing them. I advised him to line with hurdles the bank of the pond at the spots where he meant to fish—to ground-bait those spots with red worms, gentles, and especially with sweet paste, for three or four days—to then take his rod, and, supporting it on a bifurcated prop (cut off the branch of a tree) inserted in the bank behind the hurdles, to place on his line a hook broken off at the bend, that is without barb or sharp point,—to bait this harmless hook with sweet paste, and to sink it nearly to the bottom of the already ground baited water. The carp will soon take this bait; and finding they can do so with impunity, they will become bolder hourly. Replacing the bait every time it is nibbled off, and continuing to do so for three or four days, commence then angling in earnest: with the same rod and line, but with a barbed hook baited exactly as before, come behind the hurdle, and, with very light float, angle cautiously. My correspondent acted on my advice, and succeeded in catching as many of the large carp as he wanted.

This is doubtless a very ingenious plan; but, with all due deference to Mr. Fitzgibbon, I think that most fishermen might feel somewhat disinclined to sit for 'three or four days' crouched

behind a hurdle, without the possibility of catching anything—unless, indeed, it were a stroke of rheumatism.

'Ephemera,' however, had evidently conceived a very profound veneration for the craftiness of carp, especially old ones :—

Neither I, nor any one else, he says, can tell you how to catch satisfactorily with the angle the *paterfamilias* of the carp: he is so sly, and nibbles in such a namby-pamby way, that he strips the hook of its bait mouse-like. The angler that can catch *large* carp, Captain Williamson says, 'must possess several qualifications extremely valuable to the angler, and bids fair, by general practice, to be, according to the old saying, able to teach his master.' All I can tell you is, that you must fish for the carp proper with as fine a tackle as you use for the roach, and at the same time it must be stronger, for carp grow to salmon size. The baits are worms, larvæ, grains, pastes, green gentles, and green peas. A sweet paste is perhaps the best. . . . A Huntingdonshire correspondent once wrote to me that he had a pond well stored with very large carp, and that after seven years' patience with line, rod and hook, he could not catch one of them. He asked my advice —I told him to try a net!

Mr. F. Miller, in a recent article in the *Fishing Gazette*, gives the following account of a method of catching carp which he had pursued successfully :—

A few weeks since I was favoured with permission to fish a private pond well stocked with large carp. The owner of it thought it a waste of precious angler's time to attempt to hoax so capricious a feeder, and so cunning a biter, the more so as many adepts at the art had been previously disappointed. The day of my adventure was rough, though warm. The wind at times was almost sufficiently strong to blow a man out of his hat; but towards evening it lulled, and the carp began to move, jumping clear of the water in their well-known vigorous, if not graceful, manner.

I was fishing in about 4 feet of water, with two rods resting on pegs, as for bream. I had ground-baited with soaked bran and ordinary gentles, and had placed on each hook two or three wasp grubs. These I always find appreciated by the crafty *Cyprinus carpio*. To complete the sweet-toothed dainty, I took a small box

of honey, and, without touching the bait with my fingers, thrust it into the box, and coated it with the manipulated nectar. I waited and watched with the superabundant, or rather superhuman, patience necessary on such occasions, and had almost concluded that my patron's prognostications were about to be fulfilled, when my upper or left-hand float, lying flat on the water, began to glide along the surface in a very suggestive and gratifying manner.

I struck, not 'ile,' as the Yankee would say, but a game fish, which rushed upward and onward as if eager to cut my acquaintance. I had hardly felt the grip of my first fish when float No. 2 lying at length on the right, began to move in the opposite direction to the struggling captive, which already questioned my right of deprivation. 'A bird in the hand is worth two in the bush,' and a fish on the hook is worth two in the water. I resolved at once to let my second bold epicure take his hook and his chance. The rod was firm, the line was good, and some 60 yards of it formed a miniature cable between the fish and the shore. My quarry was evidently steeled to the encounter, and soon disappeared round a bend in the bank.

"Frailty, thy name is woman!' My first-hooked carp pursued the uneven tenour of his way, and showed signs of exhaustion. I looked down at my companion reel and saw that but a few yards remained of the rapidly-running line. I had given it the previous day to a fair enthusiast to place on the winch, and the idea that perhaps it had not been properly fastened, and the fear of losing it altogether, aroused me to a sense of danger and a change of action. Seizing the line with the right hand, while holding my bending rod with my left, I placed it between my teeth, and held on with a nodding grip of desperation whilst I successfully grassed my first-hooked and now defeated opponent. I then brought his roaming companion nearer home and in a few minutes he joined his mate on *terra firma*. One weighed nearly, and the other just over 6 lbs.

An editorial postscript to the above will be read with interest, as giving some recent experiences of a thoroughly practical fisherman:—

We also possess a piece of water which holds some carp—perfect patriarchs, some of them. In the hot weather they roam about near the surface, and in the spawning season roll about in the weeds like pigs. We have fished the water almost every week

for two summers, and have taken numbers of bream between two and six pounds, and many tench, roach, and rudd; but we have never got hold of a carp. And yet we have used the finest tackle, drawn gut and hair, tried every kind of sweet paste, worms, gentles, potatoes, blackberries (bream like blackberries), figs, bananas, a bit of crumb of bread just under or on the surface; in fact, there is not a bait recommended for carp fishing we have not tried, both with float and with ledger. Others who have fished the same water have had no better success with these carp. In other waters not so much fished we have taken them with small red worms and paste. We confess we have never tried for them 'from daybreak to five o'clock,' which is said by some to be the magic time, but have often wondered that when fishing late—from sunset to midnight—for eels, the carp have never touched the baits, though tench have, long after dark. Of course, we have tried ground-baits of all kinds. Potatoes mashed up with bread and pollard we have found bring the bream on best, and we should be obliged if any of our readers can suggest some plan which they find successful under similar circumstances.

I was once witness to a very curious occurrence, where a carp—naturally such a timid and dainty feeder—took in succession two hooks baited with worms, on two different lines, and was itself taken simultaneously by both, one hook being fastened on each side of its mouth: the youths to whom the singular accident happened were brothers. The distance between their two rods and baits at the time the fish took the latter could not have been less than several yards, and the floats disappeared almost at the same moment, both anglers striking together and the carp being lifted out between them.

With regard to the tench the methods of capture pursued in the case of the carp are also the best that I can recommend, but though, like the carp, good bags of tench may be occasionally made under exceptional circumstances, it is hardly sufficiently certain sport to offer any great inducement from the angler's point of view. Indeed, I never made but one real basket of tench, so to speak, in my life and that was in a stagnant pond belonging to my friend, Colonel Brooksbank, of Middleton Hall on the Wolds, Yorkshire, which had been recently stocked

with them. The largest of these tench did not exceed, however, one pound in weight, and as soon as the sun had fairly risen they stopped biting. Indeed, whatever the chance may be of catching either carp or tench, it is in the very early morning hours that it is *usually* to be found, and after about 7 or half-past arrives, the carp and tench fisherman may as well put up his rods and go home to breakfast.

Carp and tench very commonly inhabit the same waters, both stagnant and running, and should be fished for in precisely the same manner. Although these fish are frequently found in rivers, as before observed, they are very seldom caught there, and when they are, in my experience it is usually when they are not being fished for. Indeed, fishing for either of these species is at the best very uncertain work, and, in the case of rivers, generally wholly unprofitable. In weight the tench does not equal its congener, seldom exceeding 5 or 6 lbs., although occasionally heavier specimens have been taken.

The largest on record weighed somewhat over 11 lbs., and was taken from a clay-hole which had been scooped out for brick-making. This sort of pit often abounds with tench and a basketful has been known to be taken out of one not wider than a boy could jump over, and where the weeds were so thick as to be almost solid. In fact, like the carp, the tench appears to prefer foul and weedy to clear waters. Daniel, in his 'Rural Sports,' gives an account of the capture of the tench weighing 11 lbs. above referred to :—

A piece of water which had been ordered to be filled up, and into which wood and rubbish had been thrown for years, was directed to be cleaned out. Labourers were accordingly employed ; and, almost choked up by weeds and mud, so little water remained that no person expected to see any fish, except a few eels ; yet nearly two hundred brace of tench of all sizes, and as many perch were found. After the pond was thought to be quite free, under some roots there seemed to be some animal who was conjectured to be an otter ; the place was surrounded, and on opening an entrance amongst the roots a tench was found of most singular form, having literally assumed the shape of the hole in which he

had, of course, for many years been confined. His length from eye to caudal fork was 23 inches, his circumference, almost to the tail, was 27 inches, his weight 11 lbs. 9¼ ozs.; the colour was also singular, his belly being that of a charr, or vermilion. This extraordinary fish, after having been inspected by many gentlemen, was carefully put into a pond, and at the time this account was written, twelve months afterwards, was alive and well.

It is surprising in what unpromising looking holes and corners tench will live and apparently thrive. It is really the most tenacious of life of any fresh water fish except the eel. I have known one of them live for a whole day with the gimp of a double jack hook passed under the skin from gill to tail, the fish being meanwhile cast about from place to place on the water, and suspended in a most unnatural position. In fact, such is the perfection of the organs of the species, that they have been proved by experiment to be able to breathe when the quantity of oxygen is reduced to the 5,oooth part of the bulk of the water—river water ordinarily containing about one part of oxygen in a hundred.

For the tench has always been claimed the royal gift of healing by touch; and he has been supposed to possess, in the slime with which he is thickly covered, a natural balsam for the cure of himself and others.

He has been called by old writers the 'physician of fish,' who assert that, as a consequence, the pike, unsparing of everything else that swims, has yet in him that 'grace of courtesy' that he will not molest his benefactor. Some experiments, indeed, which I myself tried appear to lend colour to the fact of the pike's refusing to attack the tench, whatever may be the cause of his self-restraint.

I procured some small tench, and fished with them as live baits for a whole day in some excellent pike water, but without getting a touch. In the evening I put on a small carp, and had a run almost immediately. I also tried some pike in a stock pond with the same tench, but they would not take them; and though left in a pond all night—one on a hook, and one

attached to a fine thread—both baits were alive in the morning, some pike teeth marks, however, being visible upon the hooked fish.

These facts I mention, however, for what they may be worth, without expressing any opinion as to the truth or otherwise of the theories before alluded to.

The notion is at least a poetical one, and as such in this utilitarian age deserves to be encouraged. We are all getting so confoundedly prosaic and matter of fact that the introduction of a little idealism can but be an improvement. It would be quite refreshing to encounter a few angling troubadours on Marlow Bridge, or fishermen-serenaders, in gondolas *à la* Venice, outside Pope's Villa at Twickenham.

Anyhow, the hypothetical relationship between pike and tench has been related in verse as well as in prose:—

> The pike, fell tyrant of the liquid plain,
> With ravenous waste devours his fellow train:
> Yet, howsoe'er by raging famine pined,
> The tench he spares—a medicinal kind;
> For when by wounds distrest or sore disease,
> He courts the salutary fish for ease,
> Close to his scales the kind physician glides
> And sweats a healing balsam from his sides.

So much for the poetical explanation. A more prosaic one is given by Bingley, who suggests that, as the tench is so fond of mud as to be constantly at the bottom of the water, where the pike cannot find him, the self-denial of the latter may be attributed to more natural causes.

However, as I said before, whether true or false, I am for the more poetical solution of the *vexata quæstio.*

The flesh of the tench is white and firm and not unnutritious, though, like the eel, it would appear to be palatable in a precisely inverse ratio to the cleanliness of its abode, improving in gustatory attractions as it approaches more nearly in colour and diet the composition of its habitual mud. Thus, 'tench

were taken out of Munden Hall Fleet, Essex, which was so thick with weeds that the flue-nets could hardly be sunk through them, and where the mud was intolerably fœtid and had dyed the fish of its own hue, which was that of ink; yet no tench could be better grown, or of a sweeter flavour.' . . . 'In a clear pond at Leigh's Priory a quantity of tench were caught of about 3 lbs. weight each, of a colour the most golden and beautiful; but when dressed and brought to table they smelt and tasted so rankly that no one would eat them.' By washing the slime off the fish with warm water before cooking the muddy taste is said to be removed.

Walton says the tench 'eat pleasantly' and form a desirable addition to the *cuisine*,—also the dictum of the late Mr. Grantley Berkeley, whose experience of tench in stew ponds I have already referred to. Indeed, it is stated that in extensive tracts of water near Yarmouth tench are still bred in large quantities as a marketable commodity, being fattened, until fit for the table, upon a mixture of greaves and meal.

Characteristics of the Common Carp.—Body covered with large scales, in about twelve rows between ventrals and back fin; a single very long back fin. Lips fleshy. Mouth small, and without teeth. Throat-teeth in three rows on each side, the inner row composed of three with broad flat crowns which are furrowed, somewhat resembling those of ruminating animals. Two barbels or beards at each corner of the mouth. First back-fin, ray, short and bony; the second also bony, notched on the posterior surface, as likewise the first ray of the anal fin. Tail deeply forked. Colouring, generally, golden olive-brown, head darkest; belly, yellowish-white; fins, dark brown. Scales covered with a thick mucus or epidermis. Vertebræ 36.

Finrays: D. 22; P. 17; V. 9; A. 8; C. 19.

Characteristics of the Common Tench.—Length of head compared to total length of body, excluding tail, as 2 to 7. Head rather large and blunt. Mouth small, toothless, with a small barbel at each corner. Throat-teeth in a single row on

each side, 4 on the right side and 5 on the left. Scales very small. Back and anal fins destitute of bony rays. Ventral fins in the male very large, and concave on the inside, reaching far enough to cover the vent; in the females smaller and less powerful: the males and females may be distinguished by the size of these fins. Pectoral fins large and rounded. Tail, in young fish, concave, afterwards straight, and in old fish convex. General colour, greenish olive and golden; fins, darker; lips, flesh-colour.

Finrays: D. 11; P. 17; V. 10; A. 10; C. 19.

BARBEL[1] *AND BREAM.*[2]

BARBEL and bream, though not so intimately associated as carp and tench, are yet linked together by many common ties in the domain of angling; one of their principal similar characteristics being that they are usually fished for, at any rate so far as rivers are concerned, in the same place, with the same tackle, and the same baits. The barbel, however, so far as my experience goes, is never found in anything but running water. The bream, on the contrary, thrives best in large open lakes and in slow rivers alternating with broads or lagoon-like reaches.

Although from an angler's point of view infinitely less wary and difficult to capture than the carp, the barbel, both in its natural state and in confinement, is the shyest and most untameable of all our fish, except perhaps the roach, exhibiting a degree of reserve and intolerance of observation rarely met with. In the spring, however, when the fish seek the gravelly shallows to spawn, they become very lively, and at this season may frequently be seen tumbling and rolling about, with their bodies half out of the water, like a shoal of porpoises. Amongst some specimens kept in a vivarium, it was observed that, when they fancied no one was looking, they would plunge and rub themselves against the brickwork, and otherwise show considerable signs of playfulness.

Barbel are numerous in many parts of the world, but their natural *habitat* appears to be the warmer parts of Europe, and it is stated by Cuvier that in localities favourable to them they will grow 10 feet long. They are plentiful in the Danube, the

[1] *Barbus vulgaris.* [2] *Abramis brama.*

Elbe, and the Weser; in almost all the rivers flowing into the Black Sea; and in the Volga, where they attain the weight of 40 and 50 lbs. On the banks of this river the natives make a kind of fish glue or isinglass of the bladder, boiling the roe and feeding their geese and poultry with it. The fish themselves are sold at Astrakan at about 9*l.* the thousand.

The flesh of the fish, to be guilty of what sounds like a bull, very much resembles that of the sturgeon, to which also, in shape, it bears a strong resemblance. As is well known the flesh of the sturgeon is very solid and almost meat-like, standing, in fact, apparently about half-way between fish and flesh. I used, when living in the neighbourhood of the Thames, often to see a dish of barbel on the sideboard at breakfast time, and very good it was. I have not the recipe for the cooking, but I know that the principal secret lies in its being baked in an open dish with some cloves and perhaps other spices. When cold, the liquid it was baked in became a stiff jelly, which shows unmistakably the, so to speak, meaty, and probably nourishing qualities of the fish.

The barbel is a native of many parts of England, and is exclusively a river fish. It abounds particularly in the Trent and the Thames, in the latter being so numerous that in the neighbourhood of Walton and Weybridge as much as 280 lbs. weight are said to have been taken by a single rod in one day.

The name of Barbel is derived from the barbs, or beards, at the corners of the mouth, which are given to the fish to assist it in feeling its way about in deep and, consequently, more or less dark waters, and probably also for the purpose of enabling it to detect the nature of the substances with which it comes in contact. Of the species provided with these barbs, viz., the carp, tench, gudgeon, loach, and burbot, all find their food principally or wholly on the bottom; and generally the fact of the fish being 'bearded' affords a correct index to its habits.

Thus the barbel frequents the deepest parts of pools and weirs,—for example, Temple Pool, just on the right hand of the lock above Marlow, and New Lock, on the Harleyford side

of Hurley Weir, between Marlow and Medmenham, are two of the best swims for heavy barbel that I know of, and both are so deep that even with a heavy ledger-lead the difficulty is to get the bait to the bottom or keep it down when it has been got there. In this latter pool there are, I am sure, some barbel of leviathan dimensions, and I was once hooked in one which I played for three-quarters of an hour without ever seeing the tip of his tail. The same thing happened at the same place to a well-known Thames fisherman, except that in this case, I believe, the time fruitlessly spent in the struggle approached nearly to an hour and a quarter. In fact, the moment the barbel is hooked he goes straight down to, or rather, perhaps more correctly speaking, 'clings' close to the bottom, burrowing head downwards with all his force; and this particular method of fighting makes him, when hooked, an obstinate and sluggish rather than a lively fish.

His food consists principally of slugs, worms, grubs, and perhaps occasionally of small fish: and in order to procure these he turns up the gravel and loose stones with his nose in very much the same manner that a pig furrows a field with its snout. The baits for the fish are lob-worms (whole or the tail end), gentles, greaves, cheese, caddis-worms, and many others; but of these the first two are, in my opinion, much the best. Three styles of fishing are employed in barbel-fishing, or 'barbelling,' as it is called on the Thames, one of which is peculiar to the barbel. These are ordinary float-fishing, Nottingham fishing, and leger fishing, which is the speciality of the art, and was, until late years, almost wholly confined to the Thames and its *habitués*. A good chapter on the subject of Nottingham fishing for barbel will be found in Baily's 'Angler's Instructor,' p. 43.

The mode of Nottingham fishing, so far as the float and tackle are concerned, has been already described at p. 215. In adapting it to barbel a light bamboo rod with small stiff rings, so as to let the line run freely, and a thoroughly strong (though by no means coarse) gut line are the principal *addenda*. For

Nottingham fishing with the lob-worm, or tail of a lob-worm, which is generally preferred, a No. 9 hook will be found about the best size, and when the bait used is gentles a No. 5 or 6. The bait should just be carried by the current dribbling along the bottom. A No. 9 hook is about the best size when greaves or scratching is the bait.

Strike the moment the float disappears. In ordinary float fishing for barbel—which, on the Thames, at least, where I have principally seen it practised, is constantly combined with roach fishing—a somewhat smaller hook and even finer tackle may be employed with advantage. In deep water a No. 1 float of larger size than that represented in the engraving is as good a pattern as any that can be used. The stroke in this case also should be, if possible, contemporaneous with the disappearance of the float.

The speciality, however, of barbeling, by which also heavy bream, chubb, and perch are not unfrequently taken, is what is commonly known on the Thames as 'legering.' In this case no float whatever is employed, and the bite is detected by the hand, it being generally advisable to wait until the nibbling becomes a more decided tugging before the stroke.

A leger-lead of improved form, shown at the late Fisheries Exhibition, is represented in the woodcut. The object of the flattened shape of the lead is to enable it to rest steadily on the bottom, and the 'rounded angles' prevent it being so likely to get fast in stones or other obstructions. The object is that the line should run freely through the lead on being pulled by a fish, without which, of course, it would be necessary for the fish to carry off the lead bodily in order that a bite might be felt. The tackle for producing this result is of the simplest. At the end of two links of fine salmon gut attach a No. 9 or 10 hook and fasten the two links of gut to a yard of fine gimp, attaching also a shot at the junction of the two to prevent the lead slipping down on to the hooks. The



IMPROVED LEGER-LEAD.

gimp is run through the lead and then attached to the reel line.

Some fishermen, less particular, attach the reel line itself to the gut bottom, and others again carry refinement to a greater pitch and 'interject' a yard or two of salmon gut between the upper end of the gimp and the running line. The last named is the most complete because the finest form of leger tackle, and the other the most rudimentary. Either a whole or half a lob-worm may be used according to taste in this mode of fishing, some fishermen preferring one and some the other. The mode of baiting in both these cases has been already described at p. 229. For the method of getting and keeping lob-worms see also p. 225.

It is very essential when barbeling always to ground bait, at least some hours previously, the spot at which it is intended to fish. For this purpose bran, clay, and boiled greaves, worked up together into balls about the size of a small cocoa-nut, form a good mixture: gentles or chopped worms may be added with advantage, but clay and any of these before mentioned materials will answer the purpose. Another excellent ground bait, already described, and to which the Thames fishermen are very partial is made by putting handfuls of whole lob-worms into hollow clay balls, some of the heads and tails of the worm being left sticking through the sides. In choosing baits for the hook, worms without knots in them should have the preference. The last observation holds good with regard to every description of worms and worm fishing.

For bream fishing in rivers, the Nottingham style of fishing —with baits as described for barbel—is undoubtedly the best. Gentles and sometimes paste are also good baits for bream; the latter is principally, however, confined to stagnant waters. As regards ordinary float fishing, it may be said, speaking generally, that all ground bait and tackle suitable for roach fishing, but somewhat stronger and with a size larger hook, will be found suitable for bream fishing.

In its distribution, the carp bream is an inhabitant of all

the central districts of Europe, as well as those northward of St. Petersburg, Finland, and Scandinavia. Some of the lakes of Ireland also produce it in large quantities. In England it is found in many countries, appearing to thrive best in large open sheets of water, and in slow rivers, where the stream occasionally widens out into broads or deeps. Of the rivers near the metropolis which breed this fish, perhaps the Mole and the Medway are the most noted. They are also very numerous in the Thames at Weybridge, just below its junction with the Wey, and in the latter river, higher up towards Wisley, are occasionally caught of very large size. I recently examined a specimen weighing upwards of 5 lbs. taken thence; the scales of this fish were rough and almost file-like, from a small whitish tubercle which is a periodical production common to the species, as well as to several others of the carp family, at the spawning time. Baily mentions one of 17 lbs., taken in the Trent, but 7 or 8 lbs. appears to be the highest average really attained by the bream, at any rate in Great Britain.

Bream are gregarious, and their food consists of worms, slugs, aquatic insects, and vegetable substances.

Two varieties of the bream species are found in this country: one the Pomeranian[1] bream, an exceedingly rare fish, being known in very few waters, and the other the white bream, or bream-flat,[2] which is comparatively common. Indeed, the carp-bream and bream-flat are frequently found in the same waters, and in habits and food are nearly identical. The white bream is known to exist in Cambridgeshire, Nottinghamshire, Norfolk, and Dumfriesshire. I have taken it frequently in the River Wey, in Surrey, and it is probably locally recognised in many other counties. It is also common on the Continent and in Scandinavia. It is best fished for with roach tackle and a red worm or gentle, and has this singular habit—by which it may be constantly recognised, even before it has been seen—of rising instead of descending with the bait; in consequence of

[1] *Abramis Buggenhagii.* [2] *Abramis Blicca.*

which the float, in lieu of being drawn under water, is laid flat upon the surface. The fish takes a bait readily, but often spits it out again, from being too indolent to swallow it. The Swedish fishermen call it Aetare, or the glutton.

In the Bavarian dialect, the term *blicke* is applied to fishes that have a silvery glitter in the water, whence the specific name *blicca*, given to it on account of the brightness of its colour as compared with the carp-bream.

The points of difference between the bream-flat and the carp-bream are : (1) its colour, which is almost silvery instead of yellow ; (2) its size, which rarely exceeds 1 lb., whilst that of the carp-bream frequently reaches 7 or 8 lbs. ; and (3) its teeth (throat-teeth), which are in two rows on each side, numbering two and five respectively, those of the carp-bream being placed in only one row on each side, numbering five. This last point of difference is so obvious and easily verified that no mistake can possibly occur.

The only waters inhabited, so far as I am aware, by the Pomeranian bream are the Logan River, near Belfast, a pond at Bottisham in Cambridgeshire. some water near Wolverhampton, and the preserves at Dagenham Reach, Essex, well known to London anglers. It may be readily distinguished both from the white and carp-bream by the number of throat-teeth on each side, which are in two rows numbering five and three respectively, instead of, as in the former, in two rows of five and two, and, as in the latter, in a single row of five. It is also distinguished by the greater thickness of its body, which is equal to half its depth, whilst in the other two the same measurement is only equal to one-third of the depth. The anal fin is shorter and has a smaller number of rays than that of the bream-flat, which, again, presents a similar proportion as contrasted with the carp-bream.

The bream spawns in May, and the barbel in May or June ; the latter depositing its ova, which, in large fish, sometimes number 7,000 or 8,000, in the gravelly or shingly beds of the stream, where they are immediately covered by the parent

fishes. These eggs are vivified, in warm weather, between the ninth and fifteenth day.

The spawners, so soon as they have recovered a little strength, make their way into the swiftest stream they can find, such as rivers, mill-tails, &c., to scour and brace themselves, beginning to get into condition again in a few weeks, and being in the best season for the angler until September and October, when the frosty nights drive them from the streams and shallows into deeper waters. Here they will be found until the spring; and in these quiet deeps and eddies they are to be caught, if anywhere, during the winter months. At this period, however, especially if the weather is very cold, it is of comparatively little use to fish for them, as they lie in a sort of semi-torpid condition and refuse to move. So inanimate are they, that the fishermen not unfrequently provide themselves with hoop-landing nets, which they place near the barbel, and with a pole literally push them in. Shoals sometimes collect under the shelter of a sunken punt or other tidal obstruction, lying one over the other as closely as they can pack, and when thus congregated, they are often taken by being 'hooked foul.'

The principal Characteristics of the Barbel are:—Mouth, toothless; throat teeth in three rows on each side, the rows numbering two, three, and five respectively. Body, elongated. Length of head compared with total length of fish as 1 to 5. Depth of body less than length of head. Head, elongated, wedge-shaped; upper half of jaw much the longer. Upper lip, circular and fleshy. One pair of barbels at the front of the nose, and a single one at the end of upper lip on each side. Third ray of back fin largest and strongest, toothed on its hinder surface. Tail deeply forked at the end. Colour: general hue of upper part of the head and body, greenish-brown, becoming yellowish-green on sides; cheeks, gill-covers, golden-bronze; belly and throat, silver-white; back fin, olive-brown; margins of tail, pectoral, ventral, and anal fins, pale red, or fleshy-pink, gradually diminishing in tone nearly to base

of fins; scales, browny-bronze at base, at tips silvery-whitish; irides, golden-bronze.

Principal Characteristics of the Common Bream.—Throat teeth cylindrical, with smooth crowns adapted for bruising, placed in single rows, five teeth on each side. Mouth small, toothless, without barbels. Scales placed in curves on the fore part of the back, a naked place behind the ventrals. Length of head to body as 1 to 3. Head small, nape of neck depressed. Body deep and flat; very convex above and below, scales comparatively small. Scales of lateral line varying in number from 52 to 58. Tail long, and deeply forked at the end. Colour: generally yellowish white, becoming yellowish brown by age. Cheeks and gill-covers, silvery white; fins light-coloured; pectoral and ventral tinged with red; back, anal, and tail fins with brown.

DACE[1] AND CHUB.[2]

I HAVE bracketed these two fish together, first, because they are, amongst coarse fish, the only two that can properly be said to be of interest to the fly-fisher, not being also a float-fisher, and secondly, with a view of pointing out the characteristics by which they may be most readily distinguished the one from the other.

When the chub is not full-grown, its resemblance to its closely allied species, the dace, is so strong that I have known experienced fishermen, and even naturalists at fault in determining positively whether the fish which they had caught was a large dace or a small chub; and I well remember on one occasion finding an enthusiastic young ichthyologist sitting the picture of despair on the bank of the Wey, with Yarrell's 'British Fishes' in one hand, and in the other a diminutive specimen of the genus *Leuciscus*, which he was vainly attempting to identify by a critical comparison of its proportions, fin rays, scales, &c., with those given in the pages of that scientific, but occasionally somewhat perplexing volume. By bearing the following rules in mind, however, no fisherman need ever be in doubt as to whether the fish he has in his basket is a chub or a dace: (1) *The anal fin of the dace is pale greenish white, with occasionally a very slight tinge of red—in the chub, this fin is of a brilliant pink colour.* (2) *The hinder margin of the anal fin is, in the dace, concave—in the chub convex.*

In adult specimens the *size* of the chub is, of course, a sufficient distinction without referring to particular marks. The whole fish, moreover, rapidly assumes a bronzed or golden appearance, in place of the silvery tinting which the dace retains in its original brilliancy to the last.

Between dace and chub, and any other fish of the same

[1] *Leuciscus vulgaris.* [2] *Leuciscus cephalus.*

genus, no comparison can well arise, as all these latter (with one only exception—the minnow) are what might be termed in one sense *flat-fish*, i.e. narrow across the back and compressed at the sides—whilst the former are plump and generally *round-shaped*, so to speak, as to the body.

The dace is the type fish of the genus *Leuciscus*, which contains, in addition to the chub, the roach, the rudd, the bleak, and the minnow, and from its game qualities when hooked is well worthy of the fisherman's notice. It is a bright, graceful fish, glancing about in the clear quiet streams with which the southern counties of England especially abound, and which are often barren of trout or salmon. Moreover, it is in full season in October, November, December, and January, when trout and salmon are spawning or preparing for the process, and thus a red-letter day's sport is often to be obtained, which would otherwise have had to be left blank in the angler's diary. As a live bait for pike, also, it is especially worthy of notice, its scaling being brilliant so as to be easily seen in thick water, and its entire appearance glittering and attractive.

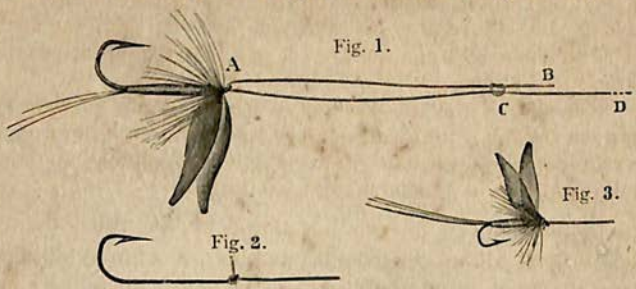
The dace rises freely at the artificial fly, and I have generally found that a small red or black 'gnat' will kill as well as anything. Some good dace fishermen assert that the fly becomes more irresistible by the addition of a small gentle on the point of the hook, especially when the fish are rising 'shy.'

I strongly recommend the Turned-down Eyed hooks—manufactured under my name, by Messrs. Harrison and Bartleet, of Redditch—for chub- and dace-flies as well as trout-flies. The engravings represent the hooks both turned-up eyed and turned-down eyed;[1] but it is the turned-down eyes that I use myself, and the advantages of which I think I can hardly too strongly advocate.

These hooks are specially constructed for attachment to the casting line by the 'jam knot,' which I introduced to the public

[1] My bend of hooks are made as well 'eyed,' as without eyes for lapping on to gut on the old system; and both can be obtained from Messrs. Farlow, 191 Strand, London.

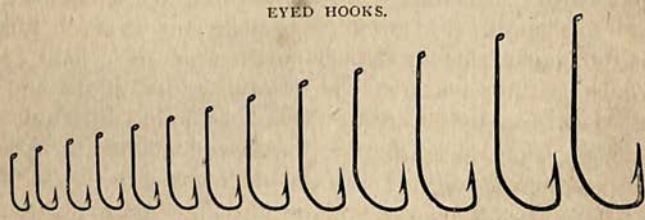
in the columns of the *Fishing Gazette.* Who was the actual inventor I am unaware. Diagrams of the knot (here repeated



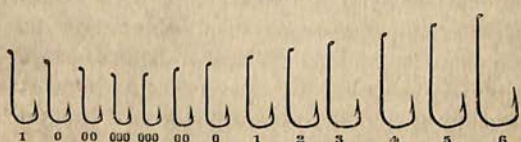
'JAM KNOT' ATTACHMENT FOR TURNED-EYED HOOKS.

for the convenience of the reader), and instructions for tying it, are appended. Fig. 1 shows the fly (enlarged), and the 'jam' knot in act of being tied—'first position'; fig. 2 is the

EYED HOOKS.



'PENNELL-LIMERICK' PATTERN.



'PENNELL-SNECK' PATTERN.

completed 'jam knot' on a bare hook, magnified; and fig. 3 a facsimile of the fly, actual size, with the knot finished, and attached to the casting-line.

The verbal formula for tying the Jam Knot is as follows :

First. Take the fly by the bend in the position shown, with the eye turned upwards (fig. 1); pass two or three inches of the end of the gut casting-line, B (previously well moistened) through the eye, *towards the point of the hook*, and then, letting go the fly altogether, double back the gut and make a single slip-knot, C, round the centre link, D.

Secondly. Draw the slip-knot tight enough only to admit of its just passing freely over the hook-eye, and then run it down to, *and over*, the said eye, when on gradually tightening (pulling) the central link the 'jam knot' is automatically formed.

In addition to its extreme simplicity, by which fly 'protectors' and all other adventitious aids are entirely dispensed with, this method of fastening has the advantage of very great rapidity—I find I can make the attachment of the fly to the casting-line complete in thirty-five seconds.

The duration of the natural 'life' of an artificial fly—especially of a large fly—attached to one of my turned-down eyed-hooks by the 'jam knot,' is at least as 3 or 4 to 1 in comparison with a fly lapped on to gut in the ordinary way. Indeed I have used the same chub-fly throughout the whole of a hard day's fishing, and it has been still in 'working order' at the end of it. Two days before writing these lines I thus used one fly from morning till dusk, taking seventeen chub with it, and whipping under boughs nearly the whole time.

Even more important, however, than the foregoing advantages, great as they undeniably are, is, in my opinion, the freedom enjoyed by fly-fishers who use eyed hooks from the necessity of attaching fresh links of gut—always dry, often glittering from newness, and generally of a different substance from the rest of the casting line—at the very point where extreme fineness, harmony of colour, and equality of taper and thickness are most desirable. Then again there is the saving of all subsequent loss of time—not to say of temper—in 'sucking,' or otherwise moistening, the newly added gut-link, without which it cannot be used unless at the risk of flicking off the fly at the first cast. . . .

I claim to present the remedy for these manifold and admitted evils in a form at once so complete and simple as to

bring it within the practical reach of all; and in the words of an enthusiastic friend to have thereby 'conferred upon trout-fishers the greatest boon since the invention of the artificial fly.'

Another experienced trout-fisher, who has given my system a thorough trial, writes:

'The "Jam Knot" is the simplest, and probably the strongest fastening for trout- and grayling-flies ever invented; whilst at the same time—owing to the hook-eye having only to be large enough to pass the gut once through it—it is also the smallest and the neatest.

'*The combination of your Turned-Down eyed hooks with the "Jam Knot" produces an absolutely perfect attachment, and finally solves the great Eyed Hook problem.*'

In venturing to quote this laudatory expression of opinion I would be understood to in no sense derogate from, or minimise the important labours of Mr. H. S. Hall and other able explorers and pioneers in the same direction—labours which entitle them to our gratitude. But for their good work the present combination would probably never have been arrived at—at least in our time. After saying this, however, the fact remains that of all existing systems of eyed-hooks, none—owing to one defect or another—has been generally adopted, or seems likely to be so; whereas I am sanguine enough to believe that in a few years the turned-down eyed hooks I have elaborated and the Jam Knot attachment—by whomsoever originally invented, but certainly perfected by Mr. Campbell's admirable discovery—will have become universal all over the world.

The following extract from a highly-practical letter, published in the *Fishing Gazette* of June 6, 1885, under the signature of 'Blue Upright,' and entitled 'Mr. Pennell's Turned-down Eyed Trout-hooks,' corroborates my own experience:—[Having, the writer says, tested them during an entire week against the ordinary flies lapped on to gut, 'so as to contrast them fairly,' he thus sums up in favour of the turned-down eyed hooks:]

'The result of the week's fishing, during which my worst day was four brace and my best nine brace, is, *on every point, favourable to the flies tied on turned-down eyed-hooks.*

I may summarise these points as follows :

1. The flies never "flick" off.

2. They can be changed—attached and detached—in less than half the time.

3. They are stronger; because whenever the gut gets at all frayed at the head it can be at once shifted (re-knotted on) whereas with flies lapped on gut the weakening at the head commences very soon, especially after catching a few fish, and any change involves sacrificing the fly; consequently the fly is, in many cases, used long after it has become weak. . . . I have not met with an instance of the knot slipping.

4. The turned-down eyed hooks appear to me to hook more fish in proportion to rises, and to lose fewer fish after being hooked.'

These hooks have lately been adopted for float- and sea-, as well as fly-fishing; and I have used them myself for Gudgeon, Rudd, Chub, Perch, Mackerel, Whiting, and Flat-fish, with perfect success.

'In this case, however—as there is no fly on the hook to keep the 'Jam Knot' from slipping up the polished shank—I vary it by making an extra turn of the gut round the shank under the central link. (On a bare hook, the 'Jam Knot' can, of course, be tied easily by the fingers, and without any 'system' of manipulation.)

Another good fastening for the bare hook—hardly so sightly, but which certainly most effectually prevents any possibility of a 'slip'—is that known as 'Major Turle's Knot,' tied thus :

Push the end of the gut-line through the eye, in the direction of the hook-point, and run the hook up the line, to be out of the way; then make a noose—the common running noose, with a slip-knot—at the end of the gut, and passing it over the hook, 'lasso-wise,' draw in the slack of the noose and pull tight.

Of baits to be used with the float the dace prefers, in most cases, a small red-worm; gentles, paste, caddis-worms, &c., are, however, not uncommonly taken. The tackle should be of the lightest: very fine gut line, No. 1 hook, and light float, say No. 1 or No. 2, according to the strength and depth of the stream.

On some of the shallows above and beyond Richmond, I had in bygone years very good sport with the dace, using the artificial fly; and at Twickenham dace-fishing appears to be still a profitable pursuit, to judge by the following account of a succession of takes in the neighbourhood during the last season by Mr. R. A. Banfield, of the Clapham Junction Angling Society :—

I fished on fifteen days ranging from August 26, 1883, till February 10, 1884, my total take during that time being 107 lbs. 4½ ozs., an average of 7 lbs. 2½ ozs. The best take was on the first-mentioned date, viz., 17 lbs. 10 ozs., the whole being dace, with the exception of 13 ozs. of roach. . . . The lowest day's take was on November 11, viz., 1 lb. 4 ozs.

The dace spawns about June in most, or, at any rate, in many rivers. In the Teme they come up in great shoals, and at this time are often caught by the net, as it is desired to keep down as much as possible the stock of coarse fish.

The principal Characteristics of the Dace are:—The whole length of the fish, body, head, and tail-fin being considered as 5, the length of the head alone is about as 1. Depth of body, about same as length of head. Back fin commencing half-way between point of nose and end of *fleshy portion* of tail. Tail fin small and a good deal forked. Scales smaller than those of chub, 50 in lateral line. Colour: back, dark olive or brownish green, becoming rapidly silver on the side. Belly, white. Cheeks, gill covers, and eyes silvery, with a touch of bronze. Pectoral fins, pale pinkish, sometimes nearly green. Ventral fins, ditto. Anal fin, pale greenish-white, sometimes with very slight tinge of red. Back fin and tail fin, same colour as back.

Of the chub as a 'sporting' fish, less can probably be said with truth than of the dace. It is not so mettlesome or gamesome, but it grows to a far greater size, and has the merit of taking the artificial fly kindly.

As its specific name 'the headed dace' implies, the chub is somewhat slow and clumsy in its movements and appearance, though, withal, a stately and handsome fish when large and in good condition; but I cannot but think that the fashion with

old writers of painting him as a sort of water-donkey, must have either lacked sufficient foundation, or else that the chub of our ancestors were somehow different from those with which we are acquainted.

For one thing I can vouch—that a fish of quicker sight than the chub does not swim in English waters. The slightest gleam of the rod—the shadow of the swallow flitting over his quiet corner—and down he goes like lead; so quickly, in fact, that the eye is rather conscious he is no longer there, than aware of his disappearance. Add to this extreme quickness of perception the woody nature of the haunts in which he is to be found, and the fact that the successful chub fisher must be prepared to cast his fly to within a few inches of the boughs—often into a space the size of his hat—under penalty of losing either his fish or his tackle, and it will be conceded that the task is no easy one. In fact, in this school not a few of the masters of the craft have passed their apprenticeship. A gentleman who is a most successful chub fisher on the Thames, and who recently gained a prize offered by the Piscatorial Society, in consequence of the very heavy baskets which he had made, informed me that, by covering his face and head with some sort of mask he was enabled to look over the edge of the bank unperceived, and could thus guide his bait into the jaws of the fish he wished to catch, and watch them take it. If he attempted the same process unmasked, the fish were instantly alarmed and ceased biting or made off altogether.

When once hooked, and the first powerful rush for the boughs checked, the chub very seldom escapes, having remarkably tough and gristly jaws, or being, as it is termed, 'leather mouthed.'

The best flies are black and red palmers and Marlow buzzes, varied according to the state of the water, weather, &c., and both are greatly improved by the addition of a small piece of white leather, or a gentle, on the point, or rather bend, of the hook.

I can also recommend a chub fly, which I have christened the 'sweep'—a name that may be interpreted in either of two ways. The formula for dressing it is as follows:—Body of black ostrich herl, and tail of white or satin coloured ostrich herl.

Legs of black hackle, as long as the body of the fly. In regard to this, as also to palmers and Marlow buzzes, the size of the hook on which they should be dressed must depend on a great variety of local considerations, not the least being the size of the chub which it is expected to encounter. As a rule, a larger fly may be used after dusk, and the brighter the day the smaller should be the fly employed.

The natural grasshopper may also be used like a fly and especially with a few gentles on the point of the hook is a very deadly bait for chub. Both with this and with the artificial fly plenty of time should be allowed the fish to get the hook well into his mouth before striking, as he is much more deliberate in his movements than any other fish usually taken with the fly. Not more than one fly at a time should ever be used.

The brightest days with the most sun and least wind are generally the most favourable for fly-fishing for chub, which are then basking on the shallows or near the surface of the water in a position from which the fly can be readily perceived.

The artificial caterpillar, with two or three gentles, or more, according to size, on the hook-point, and leaded so as to sink slowly, is a very deadly bait, especially in deep waters, as is also, towards dusk, a natural caterpillar, cockchafer, or grasshopper, used by dipping or 'dapping' over the bushes. The artificial sinking bait has this immense advantage, however, that it may be thrown as a fly and does not require constantly renewing.

Mr. Henry Cox, of Guildford, who has given special attention to chub fishing, informs me that the best bait, according to his experience, is an *artificial black slug*, natural size, leaded and used as above described for the artificial caterpillar. This was the bait also which was used by a friend of Mr. Cox's, who made the biggest baskets of chub ever seen on the Thames, and caught the biggest fish.

For bottom-fishing and ground-baiting for chub, the best baits, as well as ground baits, are those recommended for bream and barbel fishing. Minnows are also not unfrequently a killing bait in the earlier part of summer when the chub is to be

found in the sharpest and swiftest streams, into which it rushes to recover its strength after the spawning exhaustion of May.

In June and July it moves into deeper waters, especially below banks hung with trees or bushes, and will be there found until October or November when it takes up its winter quarters in quiet swims, under willow beds, amongst roots, by sunken piles, or in any other cover affording good shelter. At this period the fly ceases to be of much use, and ground fishing takes its place, for which purpose I can speak very highly of cheese paste (*vide* p. 232).

A winter bait which has found many advocates of late years is the 'pith' or spinal marrow of a bullock or cow, with bullock's brains as ground bait, as described at p. 234. In the 'Modern Practical Angler,' I have observed that, 'For this mode of chub-fishing the colder the weather the better, provided only that the water is not discoloured. The pith should be used with Nottingham tackle, so as to fish the stream for fourteen or fifteen yards down, the most favourable position being deepish water close to boughs and 'rooty' banks. The bait should swim about three or four inches from the bottom, as nearly as may be, the brains being thrown in from time to time above the swim. In this mode of fishing it is not advisable to bait any one swim beforehand, as chub are shy fish and it is seldom that more than two or three can be taken out of the same place without scaring the rest; consequently it is better to move from place to place, throwing in a small quantity of ground bait at each. By this mode of fishing the largest chub are to be taken; and when used by skilful hands, I have known a punt well to be half filled with fish.

The following correspondence on the subject of ox brains and pith as bait, took place some years ago in the columns of the *Field*, between 'Greville F.' and the editor. As the correspondence, besides giving some valuable hints, presents the *pros* and *cons* of the question in a picturesque way, I here quote it.

Sir—In reply to 'E. R.,' in notices to correspondents in last week's *Field* the following paragraph appears: 'We never used it, as one

of the first directions given by those who use it is to chew it and spit it into the water as ground bait; and as we had an intolerable aversion to chewing *raw* material of this kind, we never got any further with it.' Now, Mr. Editor, every angler will know by this announcement what is meant, and that it is an unequivocal denouncement of the uses of ox brains and 'pith' as a bait for chub. Anglers, in verity, have quite enough to refute on the score of habits scarcely refined, when the impalement of worms, frogs, gentles, beetles, snails, and even cockroaches, is in question; but it is a *leetle* too bad to add to this category of uncleanly handlings that of a process hitherto confined to Otaheite. Too hot to eat these brains may sometimes be; for let me tell you, in spite of the italicised '*raw*,' they are first boiled, and many an Italian considers them, with the accompaniment of a little melted butter, as fine a dish as is brought to table. I know of no work where the instructions are that these brains should be masticated in a *raw* state: and if any exist, the writer must have been wholly ignorant at the time that they would be useless, for the simple reason that they could not be separated by the teeth into that state of fineness of particles necessary to form the most tempting ground bait—if that can be called so that does not sink—that was ever offered to a chub. But as some doubt does exist upon this subject, let me, for the sake of decency, first remove the prejudice against this bait entering the mouth of the most fastidious. I have here a recipe from my late friend M. Soyer, who, it will be admitted, was not altogether an unaristocratic gastronome: 'Lay the brains in lukewarm water to disgorge, then carefully take off all the skin: put about a quarter of a pound of butter in a sauté pan, rub all over the bottom, cut the brains in slices, lay them in the pan, and season according to liking. Many prefer the brains as a dish by itself, plain boiled, and merely flavoured with salt, pepper, and perhaps a slice of lemon.' Here, then, we have the luncheon prepared for the chub, *minus* the condiments. They are not raw, as stated, but scrupulously cleaned and skinned. Many a poor man gets a worse dinner, and there are well-fed fishermen on the Thames—puntsmen spoiled by over indulgence—who labour under a shrewd suspicion that, when they recommend brains, it is one word for the chub and two for themselves. My only personal objection to their use is dental; and if it be so in others, they must choose their fishermen like a horse, by his teeth. When Colonel S. first saw 'Nottingham George' go through this process, and witnessed the cargo of chub that was brought to punt by its application, he is said to have astonished the company at dinner

at the palace in the evening by accounting for his fatigue with the statement that, while he was fishing, a man in the same punt 'blew out his brains'—the surprise being only allayed when his friends were assured that the fellow did it for his living. In using brains, the essential is that the particles should be so minute that they should be capable of being extensively dispersed upon the water. If too large, the chub would be satisfied with this gratuitous offering, and not come to the hook—Master Chub being somewhat like the guest of Count Beaufilitte, an eminent gourmand of Louis XIV.'s reign, who, objecting to the *fricassée* not being sufficiently minced, was answered, 'Oui, je pense la denture de mon chef actuel n'est pas si bonne que celle de mon dernier.' But what is 'pith'? This is simply the spinal marrow of the ox, which requires some little skill to manipulate for the hook, and is the *bonne bouche* of the repast, the brains being but an appetising whet or preparation. It will be found that after the pith is taken from the vertebræ it possesses two skins. The outer one, which if boiled would be too tough for the hook to penetrate, is removed by first cutting the tube the entire length on one side with a sharp pair of scissors, and then with the finger and thumb pulling it off the pith, which is now perfectly white, but when boiled for a few minutes the inner skin becomes brown, and is then consistent enough to hold on to the hook. This is, perhaps, the most killing bait for chub in the winter months, even when the snow is on the ground, that has ever been discovered. 'The Angler's Instructor' on this head says: 'Bullock's brains, when nicely cleaned and cooked, are as white as a curd, and fully as sweet to eat as sheep's brains. The renowned "Bendigo" when he goes chub fishing—and he is no novice at this game—takes half a hatful with him, and he is obliged to chew the brains before he throws them in; nor can he prevent, as he says, a portion going down his throat, they are so sweet: so, you see, he fishes with one part and swallows the other. Two heads of brains are quite sufficient for a day's chub fishing.' If, however, you have an epicure in the punt with you, it may be well to provide accordingly, or you may find yourself brainless before half the day is over.

GREVILLE F.

[The process of chewing ox-brains, whether cooked or raw, and sputtering them into the water all day long for ground bait is certainly (at least in our opinion) one which might raise an objection to the use of such a bait on the part of any angler troubled with the slightest feelings of delicacy in the following of his amusement.

Perhaps we are over-fastidious, but we cannot help thinking that, even at the expense of a slight reduction in the weight of our bag, we should prefer some other bait. We fancy we know something about chub fishing, having made some tremendous bags of them in our time; and if chub are in the least inclined to feed, we do not believe that the superiority of brains over greaves or cheese, &c., would be so great as to make it worth our while to undergo such a process. We might like to eat ox-brains cooked; we cannot say, however, for certain, as we never tried them. We do like sweetbreads, for example, but we might have a well-founded objection to chew *them* and spit them in the water all day. It is perhaps a matter of taste after all, and 'Nottingham George' and the renowned 'Bendy,' though no doubt capital fishermen, are hardly the Mentors whom we should select to instruct us on a matter of that kind. As regards the question of cooked or raw, we certainly have seen it recommended that they should be masticated raw, and we well remember that precisely the same objection was raised to them as we have made. We believe that a short correspondence embracing these points took place in the *Field* some years ago; and we well recollect, that the answer of the advocate for chewing the brains raw was that 'they were very sweet.' As we have said, we never used them, having an objection to them, as already expressed; and perhaps it would have been better to have simply chronicled our want of experience, instead of adding thereto the reasons for it. We fear that even now, when we do know they are to be cooked, that want of experience is likely to continue, unless, indeed, our friend 'Greville F.' has any sympathy with the puntsman whom he quotes, and would really *like* to do the masticating and blowing part of the process for us; in which case we will test the infallibility of the bait with the greatest pleasure.—ED. *Field.*]

Table of Comparative Weights and Lengths of Chub.

Length.	Weight.	Length.	Weight.
inches	lbs. ozs.	inches	lbs. ozs.
9	12	17	2 13¼
10	13¾	18	3 5½
11	14¾	19	3 15¼
12	1 0	20	4 9½
13	1 4¼	21	5 5¼
14	1 9½	22	6 2½
15	1 14½	23	7 0½
16	2 5½		

The chub usually spawns in May or in the latter end of April, selecting for this purpose a shallow gravelly bottom under weeds. After the spawning process it is supposed to be ready to bite almost immediately.[1] The taking, however, of this or any other species immediately after spawning is an unworthy practice which should be discouraged by all true sportsmen, as the fish are then weak, ravenous, and more or less unfit for food.

Although, as observed, the dace appears to be a purely river fish or, at any rate, cannot thrive or breed freely in waters that are absolutely stagnant, I have reason to believe that the chub will do both. Mr. Cox mentioned to me a pond at Finchley, the name of which has now escaped me, in which it was evident that chub must have bred, as those put into the pond were all large fish, and specimens were subsequently caught under half-a-pound. In another pond, at Guildford, having a stream through it in winter though stagnant between spring and autumn, chub throve and grew, but did not breed. It seems probable, therefore, that no absolute rule upon the subject can be laid down, and that the extent to which chub will thrive and breed in stagnant and semi-stagnant waters depends upon a variety of local conditions, food, &c., that cannot be precisely formularised. The same observation applies to gudgeon which, while sometimes breeding by thousands in ponds with a current occasionally running through them, in others, apparently quite as well adapted for them, become infertile.

The following recipes for making the chub a palatable dish may be of interest to those who like, on principle, to have all the fish they catch cooked, and, if practicable, eaten :—

After being scaled and cleaned, they should be cut open like haddocks, well peppered all over, and then a good handful of salt rubbed in ; let them lie in this all night. In the morning hang them up in the sun all day, to let them dry ; fry them in the evening, with as little lard or butter as practicable, and eat them

[1] Baily's *Angler's Instructor.*

cold for breakfast. If you try it, I think you will say they are an excellent relish for breakfast, and nearly as good as anchovies. The secret lies in well drying them in the sun, and eating them cold.

Another angler lately wrote to the *Field* :—

Although the chub is generally a much despised fish, he is capable during the days of winter, the colder and more frosty the weather the better, of being elevated to a dish by no means despicable. At a dinner recently I was 'helped twice' from a *plat* of this fish, not knowing what it was composed of, and being induced by its delicious flavour to commit this solecism. When told that I had been regaling so earnestly upon chub from a neighbouring stream, and expressing my desire for the recipe, my hostess very kindly upon my quitting gave me the following, telling me at the same time she had received it, while residing in Italy, from a Jewish family: 'Take four or five large onions, boil them until they give to the pressure of the spoon, slice them; take the back bone out of the fish, and cut it, if large, into pieces of 3 in. or 4 in.; strew equally over the bottom of a stew-pan a little ginger in powder, salt and pepper; place the fish on these, and almost cover the fish with fresh water, then the sliced onions over all; put the lid on close, and let it simmer gently till all is done. While this is proceeding beat up the yolks of four eggs, with a good quantity of parsley chopped very fine, and a little of the liquor from the stew-pan, and while it is amalgamating, squeeze the juice from two lemons into it, very gradually, or the juice will curdle the egg. Take up the fish with the onions upon it in a deep dish, and pour the mixture over it.' I ought to add that I tasted the dish again when cold next morning at breakfast, and that it had lost nothing of its relish, and I do not think that many who sat down before it without prejudice would come to any other than such a favourable conclusion. Perhaps vinegar instead of lemon might cheapen the dish, but as the recipe is given, it may be classed as economical.

The principal Characteristics of the Chub are :—The whole length of the fish, body, head, and tail fin being considered as 5, the length of the head alone is a little more than as 1. Depth of body, a little greater than length of head, which is rather blunt at the muzzle. Back fin commencing half-way between point of nose and extremity of tail fin, and rather

nearer the tail; hinder margin of this fin and anal fin convex. Tail fin large and somewhat forked. Scales very large; 44 or 45 in the lateral line. Colour: all the upper part of the back and back fin dark brownish green or olive-brown, the margin of each scale being darker than the rest. Belly silvery-white. Sides, when young, silvery, becoming more golden or bronzed towards the back, and darker and more bronzed as the fish attains maturity. Tail fin in adult specimens dark brown almost black in stripes, and with still darker margin. Pectorals, bronzy olive-green. Ventral and anal fins, bright reddish pink. Cheeks and gill covers, golden yellow. Irides golden-greeny bronze.

GUDGEON[1] AND BLEAK.[2]

APART from the interest which bleak and gudgeon possess as baits to the pike and trout fisher, they are by no means without attractions of their own, from an angling point of view, and certainly any treatise on British sporting fish and fishing in which they did not figure would be incomplete.

At this point, however, all common bond of union between the two species ends. Indeed, it would be difficult to hit upon two fish whose appearance, habits, and *habitats* are more totally dissimilar. The gudgeon, like the barbel, is essentially a ground feeder; the bleak, on the contrary, is most frequently to be seen glancing about either actually on or quite close to the surface of the water. In shape the body of the former is cylindrical, and that of the latter almost flat, whilst the olive-brown head, back, and sides of the gudgeon, with their black spotting, contrast forcibly with the silver and white scalure of the bleak, which at its darkest point (on the top of the back) presents no more sombre tint than the palest of bluish greens. Their food, of course, differs in the same way according to their different *habitats*, and as the result of this 'similarity of difference,' it is probable that if one were to fish for the bleak from one year's end to another with the tackle appropriate to the gudgeon, and *vice versâ*, he would not take a solitary fish.

In its shape, it has been observed, the bleak contrasts remarkably with the cylindrical body of the gudgeon. It may, however, be added that the bleak is the only one of our fresh water fish which is in shape narrow as well as flat. Rudd,

[1] *Gobio fluviatilis.* [2] *Leuciscus Alburnus.*

roach, and bream are all more or less flattened or compressed at the sides, but then they are also broad—*i.e.*, deep from the back to the belly—and in this particular show a striking contrast to the bleak, which is almost sprat-like in appearance.

The bleak is so common throughout England and in most rivers producing roach and dace, that a detailed description of its appearance would be superfluous. It is a very playful and sportive fish, and on a summer's evening may be seen perpetually darting about and leaping at the midges which would fain flit out their three hours' existence over their native stream. Whipping for bleak used to be a favourite amusement with our ancestors, and even with the classical anglers of ancient times :—

> Quis non et virides vulgi solatia Tincas
> Norit, et ALBURNOS prædam puerilibus hamis?

By the young Etonians of the present day, however, bleak-catching is voted *infra dig.*, and the little fish is seldom molested unless for the purpose of bait.

Its name, bleak, which has reference to its shining white scales, is taken from a northern word signifying to bleach or whiten—*blik* (Danish), *blick* (Swedish and German), 'glance,' 'glimmer.'

Its brilliant scalure appeared, some years ago, not unlikely to lead to its total extinction. A silvery pigment is found on the under surface of the scales from which they derive their metallic lustre ; and this colouring matter was universally used in the bead trade for imparting a pearly tint to their wares.

So great at one time was the demand, when the fashion of wearing imitation pearls was at its height, that the price of a quart measure of scales varied from one or two guineas to five. At one factory alone, in Paris, 10,000 pearls were issued per week ; and when it is considered that each pound of scales cost the lives of 4,000 fish, and that this pound only produced 4 oz. of pigment, some estimate of the destruction effected amongst the bleak may be formed. The Thames fishermen gave themselves

no trouble beyond stripping off these valuable appendages, throwing away the fish when scaled. Roach and dace, and some other fish also furnished a colouring substance, though of an inferior quality, the best of all being procured from the white-bait; and it was the regular custom amongst hawkers, before selling any 'white fish,' as they were termed, to supply the bead-makers with their scales.

The method of obtaining and using the pigment was, first by washing and then scraping the scales, until the colouring matter descended to the bottom of the vessel in the form of a pearly precipitate, whence it was removed by small tubes and injected into thin hollow glass beads of various sizes. These were then spread on sieves, and dried in a current of air. If greater solidity appeared to be necessary, a further injection of melted wax was resorted to.

At present the material for making the artificial pearls is supplied by the swimming bladder of the Argentine or Tiber pearl fish. The bladders are placed in spirits of wine, and when required for use, are taken out and steeped in a solution of isinglass until all the pearly particles have been detached, the method of injection being as before.

It occasionally happens to the angler to catch pearls ready made. These are found in the large river mussel, which, as is well known, will not unfrequently swallow a worm or other ground bait, taking so fast a hold with its shell lips as to be fairly hoisted out of the river's bed and basketed. An instance recently occurred near Tweed Mill, Coldstream, where a boy, who was worm fishing for trout in the Chapel Brook, caught a mussel four inches long and two broad, containing no less than forty fine pearls of different sizes, some of which were thought to be worth ten shillings each.

It has several times happened to me to take mussels whilst fishing; but, either owing to my want of luck or lack of inquisitiveness, I have hitherto discovered nothing in them more valuable than mud. There is another species of mussel, never, I believe, found on these shores, called the 'nacre,' from which

mother-of-pearl is procured; this shell-fish grows to the length of two feet, and according to Oppian, enters into co-partnership with a small species of crab, which permanently resides within its shell, and in return for this lodging accommodation caters for the 'board' of both parties.

Pearl-fishing is often a very productive industry on the Tay and other Scotch rivers, such as the Earn, Isla, Lochy, and Dockart. On the Tay it commences a little way above Scone Palace. The pearls are found in the shell of the common fresh water mussel. The fisher, armed with a long stick split at the end, wades into the water till he reaches the mussel beds. Lifting up the shells one by one with the stick, he transfers them to a bag which he wears. The great purity of the water enables him to choose the shells which he may reckon most likely to suit his purpose. After his bag is filled he comes to the bank, and sitting down opens the shells with a knife, examining them carefully before he tosses them back into the water. Sometimes he may open hundreds and find nothing; at other times pearls of great value are found, worth as much as 10*l.*, 15*l.*, or even 20*l.*, and some years ago a young lad got one in a small river, a tributary of the Tay, which was shortly afterwards sold in London for 100*l.* Pearl fishing is by no means an unpleasant employment for a fine summer's day, and it is only then it can be prosecuted when the waters are low and clear.

Of one mode of catching bleak I have already spoken in the note which Mr. Senior has embodied in his article, 'Roach fishing as a fine art.' This is the most certain way of taking bleak that I am acquainted with. The method is to use a single gentle at the end of a very fine casting line, without shot, and with a piece of cork the size of a pea, to serve as a sort of float three or four feet above the bait—*a few gentles or soaked bran also being from time to time scattered into the river to attract the fish.* The hook should be small enough to be entirely concealed in the gentle. A light fly rod is the most agreeable as well as most effective weapon.

In this fishing it is well to select a swim where the fish are actually rising, which they are pretty sure to be if they are there at all, and if they appear to be following the bran or gentles down the stream the angler should do the same and always cast where he sees most rises. Wherever bleak are tolerably plentiful a good dish, or a good can full, as the case may be, can generally be obtained, and those the finest. Dressed and eaten like white-bait and thoroughly browned over a sharp fire bleak make a fairly good dish, especially if a squeeze of lemon be added. It is a *sine quâ non*, however, that they should be eaten straight off the fire, and that they should be well dredged with plenty of salt and pepper *whilst they are in the process of frying*. In fact, the latter prescription holds good in all sorts of fish-cookery, and is especially true of gudgeon, which cooked in the same way, is even better fare, or, as some old writer describes him, 'a dish fit to fatten a king.'

I once knew a great fish epicure who was so devoted to this dish that he never went out gudgeon-fishing without taking with him in the punt a 'travelling kitchen range,' consisting of a small frying pan on a frame over a spirit lamp, and ate his gudgeon and sometimes his dace also (scaled, N.B.) as the *pièce de résistance* for luncheon. This connoisseur considered the dace almost the best fresh water fish for the table. Bleak also, he spoke very highly of, and was of opinion that when fried *just out of water* they are actually better than gudgeon. Not even my friend's cookery, however, could enable him to stomach roach.

Another enthusiastic writes: 'In a gastronomic point of view, the *Gobio fluviatilis* gives precedence to none: a fry of fat gudgeon, eaten piping hot, with a squeeze of lemon juice, is a dish "to set before the king," and as superior to anything that Greenwich or Blackwall can produce, as Moet's champagne is to gooseberry pop.'

'John Williamson, gent.,' (*temp.* 1740) who seems to have had a keen eye to the good things of this life, writes of the gudgeon that he is 'commended for a fish of an excellent

nourishment, easy of digestion, and *increasing good blood*,' adding, in fine :—

> Though little art the gudgeon may suffice,
> His sport is good, and with the greatest vies ;
> Few lessons will the angler's use supply
> Where he's so ready of himself to die ;
> For if no heats or flashes interpose,
> His prize he'll hold, and yours you cannot lose.

Even as a cure for desperate diseases, the gudgeon is not without his encomiasts : *passim* an author who wrote a 'History of Fishes' in 1772, and who says (p. 113), that he 'is tender and delicate, *and by many swallowed alive*, being thought good for a consumption.' . . . It is to be presumed, however, that the fish to be thus disposed of were not of the same size as the four from Uxbridge to which he refers immediately afterwards as 'weighing a pound' each.

Galloway, the fisherman of Chertsey, tells, I remember, a good story of two old gentlemen, 'mighty gudgeon fishers,' who were in the habit of betting heavily on their respective 'takes,' till at last, the old fellow who almost always won, was discovered with a *silk casting net* stowed away under the boards of his punt ! This old gentleman, by the way, lived at Hampton ; and it is curious how many H's there are scattered up and down the Thames—Hampton, Halliford, Harleyford, Hurley, Henley, all beginning with the eighth letter of the alphabet, and all redolent of gudgeon-fishing which its votaries maintain to be *par excellence* the sport of the poet and the philosopher.

The only mode of fishing for gudgeon is on the bottom, this being his invariable *habitat*, and here he feeds on worms, insects, larvæ, spawn of other fish, and such matters, so that when angling it is usual to rake the bed of the river in order that the fish may be attracted to the spot by the animalculæ, blood worms, &c., which are disturbed in the operation. These blood worms, often found by thousands on the surface of mud, seem to be formed of ten or twelve connected globes, diminishing in size towards the tail. The mouth is the largest part, and

appears to be perpetually wide open, with three little prongs or forks protruding. In colour the whole creature is of a bright crimson, and its structure, which is always sufficiently curious, becomes positively beautiful when placed under the magnifying glass. Near Whitehall Stairs the surface of the mud has a deep reddish tint, owing to the innumerable quantity of blood worms; and it is the common superstition that this appearance was never seen before the decapitation of Charles I.

Blood worms, however, are impossible, or next to impossible, to bait with, from their extreme smallness, and practically the best bait for gudgeon is the tail of a small well scoured brandling; the tackle used being the same as that for the roach, but with a size smaller hook, say, a No. 2 or 3, and the depth plumbed with great accuracy so that the bait may just brush along the bottom. It is best to strike as soon as the float is taken under water or held steadily down, but not when it is merely disturbed by nibblings. No ground bait is commonly used for gudgeon-fishing, and if there be any which is really of any use it will be found quite inferior to the process of raking above recommended. A long heavy iron rake, especially suited for the purpose, is generally kept by every Thames puntsman in his boat. A gravelly bottom with a depth of from 4 to 6 feet of water is the most favourable *locale*, and the best time of the year, summer, and that rather late on, as the gudgeon, as well as the bleak, spawns in May.

When gudgeon-fishing it is recommended to put out a paternoster for jack and perch, which may both add to the basket on its own account, and also keep away, in the most effectual manner, intruders who would be otherwise likely to 'spoil sport.' The gudgeon is a very bold biter, and when he comes on the feed will give constant work to the fisherman as well as to his attendant in taking off the hooked fish and re-baiting. Perhaps, primarily owing to its instinctive readiness to bite and general simplicity of behaviour, it has many admirers amongst the fair sex, who frequently become very skilful in its capture. I once had the pleasure of forfeiting a pair of

gloves to a young lady who laid a wager that she would catch ten out of a dozen bites, 'nibbles included,' and actually did it.

Notwithstanding, however, this somewhat feminine reputation, there is no doubt that for male minds also gudgeon-fishing occasionally possesses a peculiar fascination; and it is mentioned as a fact that the clergyman of a parish near Hampton Court, who was engaged to be married to a bishop's daughter, lingered so long over this sport as to arrive too late for the ceremony, whereupon the young lady refused to be united to one who preferred his basket to his bride.[1]

I used greatly to enjoy a day's gudgeon-fishing myself in my schoolboy days before loftier ambitions had stepped in to throw my punt fishing propensities into the shade; before I had risked my neck in a helter skelter rush after a 20-lb. salmon; exulted in a tussle with that grim cannibal, the pike; or, trout rod in hand, strolled my solitary way by the banks of the arrowy Dart—

> Shut in, left alone, with myself and perfection of water.

But at the time I speak of I was a glutton for Thames punt fishing, and for gudgeon fishing in particular. I remember my enthusiasm effervescing in a semi-jocose article to a sporting contemporary. If I reproduce a part of this article here, my apology must be that it recalls the red letter days of boyish existence, which cannot, alas, be lived over again; and as I began my fishing experiences on the banks of the Thames, so I may perhaps not inappropriately conclude this book, the last I shall probably ever write on fishing, with a tribute to my Alma Mater.

'Of all spots and sports, commend me to a good gravelly swim on the Thames in July—a punt, a rake, a pretty companion and a day's gudgeon fishing.

What can be more jolly? A fellow has come back regularly done up, perhaps, with grind, to spend the "long" at the Grange with the cousins (Julia is a ward in Chancery, I fancy?)—one of those broad white houses to be found nowhere but on the banks of the Thames, with a skirting of pheasant cover or wooded cliff

[1] Jesse's *Angler's Rambles*, p. 4.

as a background, and a lawn as smooth and green as the finest Paris velvet, sloping down from the drawing-room steps to the boathouse. The moment breakfast's over, "Now then come along girls!" someone shouts—and out you go through the window or over the balcony—a scamper to the boathouse, a vigorous shove or two with the punt pole, and in five minutes the ripecks are fast, and everything ready in the very perfection of a "pitch"—not that one out there over the shallows, for the sun will soon have done washing his face, and in an hour will blaze up dazzling enough for Phaeton himself—but the other, under the island yonder, and just within the dip of the chestnuts, where you can see the "golden gravel," as Tennyson calls it, as bright as a new guinea.

Splash! in goes the rake, leaded at the end like a constable's staff that it may sink well out, over the swim—three minutes' vigorous raking—another for comfortably shaking down into places, and you are about to set to work with a will, when you probably discover that Blanche has broken her float, or that Julia's hook is off (it was yesterday!) . . . But floats are not difficult to mend, and there are more hooks than one in the world, so everything is soon *en règle*, and at it you go.

Ha! a bite the moment the float touches the water, bob—souse!—you have him—so has Julia (Blanche and Charley aren't baited yet)—two fish in two swims—that looks well; for if gudgeon don't come on to bite at first, they often don't do it at all.

"A pair of gloves that I catch the first dozen?" "Done,"—and done you are, for Julia nobbles twelve unsuspecting *gobiones* in as many swims, before you have bagged your fifth, and triumphantly informs you that her size is "sixes, sir."

"Once more! come, double or quits?" . . . .

If you are lucky you possibly win; but if you are not only not lucky, but in love, you lose to a dead certainty. Something must be wrong; you examine your little red worm with an unloving and critical eye, and you find that your No. 9 Kendal is minus its barb! Well! that's soon remedied:—"Come,

another pair?" but Julia declines with thanks the proffered "glove," and suggests that when she accepted it before "your *hand* wasn't in." The little sharper! Well, so she is—sharper than you at all events; and she might have accepted your challenge, sir, with the utmost safety if she had chosen to bleed you; for she is one of the best gudgeon-fishers on the Thames, and when ladies *do* take in earnest to catching gudgeon, let me tell you they beat the lords of creation into fits. "Bless you!" as a Smithfield butcher once observed to me *à propos* of sticking pigs, "it comes nat'ral to 'em."

But how's this? The gudgeon have all at once left off biting. Half-a-dozen swims without a nibble—"give them another rake." You do, till your arms ache. But you might just as well give them another spade for any effect it produces. Stay—I see! My friend, Mr. *Perca fluviatilis*, is below, and the process of biting, so far as the gudgeon are concerned, is taking a passive instead of an active form. Try him with a paternoster; whilst he stops there nothing will bite, depend upon it,—you might as well try and tempt a snake-fascinated parroquette with a caterpillar! Ha! I have him . . . a *John*, by all the powers!—a big, bullying pike, come here to make a breakfast. Julia, the landing net—quick—don't wait till he's done up, but pop it under him the moment you get a chance, for whilst he can show fight he keeps his tail towards you and his head down, with the gut in the corner of his great mouth where he's got no teeth; but as soon as he's beaten, his mouth slews round, and the line will be in the breakers in a moment. So—bravely done! a six-pounder at the least and in capital condition.

But what on earth can Charley and Blanche be about all this time? They actually haven't begun yet! Well, the fact is that Blanche and Charley have contrived to get their two lines into a most vigorous tangle, and somehow the juxtaposition of so many pair of taper fingers doesn't seem to have much expedited matters.

. . . . . .

But there! What's the good of talking and making myself

melancholy? a fellow can't eat his cake and keep it; it's all over and done with, and here I am back at my venerable Coach's again—Homer, Horace, Livy—Livy, Horace, Homer—the old grind! Adieu to gudgeon and gudgeon fishing, Hurley Bucks, Harleyford Woods, cool breezes, murmuring rivers, and pretty cousin Julia—until the next long vacation.'

Glide gently, thus for ever glide.
O Thames! that anglers all may see
As lovely visions by thy side,
As now, fair river, come to me.
Oh, glide, fair stream, for ever so,
Thy quiet soul on all bestowing,
Till all our minds for ever flow
As thy deep waters now are flowing.

H. C.-P.

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ROACH-FISHING AS A FINE ART,

WITH A FEW WORDS ON THE RUDD.

To describe roach-fishing as a 'Fine Art' may, in the opinion of some sportsmen, be deemed an abuse of terms. I can, in fancy, see the smile—kindly may-be, yet sardonic—which flits across the countenance of many a reader as he scans the heading of this chapter. He puts the book down for a moment; knocks the ash off his cigar; leans back in his chair, and runs his eye along the wall, upon which, in the pleasant sanctum of the angler, hang his salmon and trout rods. 'Roach-fishing a fine art is it?' he mentally enquires. 'Fly-fishing I know, spinning I understand. They are sciences, fine arts if you like, but roach-fishing—no.' My good sir, pause awhile. Be reasonable. Lay yourself open to conviction. Allow yourself to be cross-questioned, and admit once for all that your credulity is the consequence of what very blunt persons—say Dr. Johnson—would call sheer ignorance, but which I will merely specify as defective knowledge upon the subject. Believe me that roach-fishing can be elevated, and is often elevated, into a very fine art indeed, as I will endeavour to explain before I lay down my stylograph. At the same time, to soothe your troubled soul, I have no objection in the world to admit that there has been an enormous amount of nonsense written about the game qualities of the roach, the superlative character of the sport, and the consummate skill required to catch the fish. It will be sufficient for my purpose to remark, as an ending to this introductory paragraph, that for many reasons, roach-fishing may be fairly included in a catalogue of British sports, and must be

included if such a catalogue would be complete. It is very far from being the highest form of the delightful pastime of fishing, but it is also very far from being the lowest, and when practised by master hands, touches that vague and limitless region marked upon the map of estimation as 'Fine Art.'

The roach is a popular fish. From the frequency with which the phrase 'the greatest happiness for the greatest number' appears in newspaper articles we are bound to suppose that it represents a great truth. With regard to angling, it must be, in all honesty, applied to the roach (*Leuciscus rutilus*, or red dace). In point of numbers there is no other description of British fish that makes such intimate acquaintance with the hook. It is the pride and joy of the school-boy. Through the successive stages of manhood it stands the friend of half-hours of leisure. Old age, debarred from the more moving incidents of flood, and field, and forest, sits serenely on the bank, and patiently watches the float on its persevering journeys down the favourite swim. In the neighbourhood of our large towns the jaded worker for small wages finds healthy and absorbing recreation after the drudgery of the day in his evening attempts upon the roach. Let the Thames, Ouse, Trent, and Lea, summer and winter alike, bear testimony to the vast supply of innocent and tranquil enjoyment furnished by this humble little white fish. Nor are the causes of the popularity of the roach difficult to discover. A few may be enumerated.

The roach is a perennial amongst fishes. The prey of predatory pike, perch, trout, and eels, and of certain fish-eating birds, it sturdily declines to be annihilated. Other fish may succumb to disease and pollution, but the roach, though often sorely afflicted by both evils, lingers on long after other species have been driven away, or have floated lifeless to the top. It is a very hearty breeder, moreover, and according to a trustworthy report, a single specimen has been known to produce 81,586 eggs. Then, the roach is to be found almost everywhere. Unless, for purposes of trout stocking, it has been netted out, it may be caught in most English rivers. Large or small, well-

bred, or degenerated by circumstances into a caricature of the type, it haunts our ponds and lakes. A slant of sunlight upon the very ditches will reveal it hurrying to cover as you approach. Save in the Black Country and in the inky water of manufacturing districts, it thrives in the canals. A summer or two since I saw the surface of the Regent's Canal, at College Street, Camden Town, alive with roach of six inches long or thereabouts. It is found, in a word, not in single spies, but battalions.

Not a little of the popularity of the roach must be assigned to the associations of summer connected with it. The majority of roach anglers are of the fair weather order. Keen sportsmen, of that particular degree, get their best fish in the winter months, but the dilettanti rank and file of the craft finish with October. Notwithstanding the Philistine sneer at the assertion that the beauties of Nature are a strong attraction for the angler, the fact remains. The meadows, woods, birds, bees, dragon flies, forget-me-nots, meadowsweet, and even the water-vole, and moorhen, enter into the vision which tempts the angler to the waterside. Whatever the ordinary bottom-angler may do, the roach-fisher who raises the pastime to the fine-art stage, least of all, perhaps, abandons himself to the glamour of the surroundings, for his attention must not be diverted for a moment from the serious occupation in which he is engaged. But he is in a minority. The bulk of English roach-fishers will assure you that the pleasures of the country are of more account to them than gross weight. And rural England,—even the cockney portion of the Thames—is, railways and factories notwithstanding, a lovely thing indeed, from the June days when roach-fishing commences, onwards to the end of the season. A little angling, with a good deal of the sweet sights and sounds which it brings, is a boon to tens of thousands who ought to be ever grateful to the roach, which is their excuse and opportunity.

Some descriptions of angling, as many of us know too well, are very costly in comparison with the results. Roach-fishing,

however, is the most inexpensive. The gentlemen who habitually patronise fishing from the Thames punt will probably dissent from this view, and with not a little reason. But I regard them as the luxurious individuals of the tribe who are content to pay for other things than mere fishing. The ordinary roach-fisher requires but little tackle, and that of the cheapest character. The rod is the most serious item, though a few shillings will procure a really serviceable implement. Should he use a winch, the simplest form will suffice. Neither check nor multiplier is wanted. His line may be carried in an envelope. The float, shots, footline, and hooks are bought for a few pence. Another point to consider is the small amount of labour involved in roach-fishing. A day's conscientious fly-fishing or spinning is downright hard work for strong shoulders. The roach-fisher literally takes it easy, sitting upon his basket, box, or chair, or if needs be upon the bankside, cheered by the thought that if the working of his method becomes monotonous in the absence of sport—a not unusual experience of the class—it at least does not call for heavy active labour. And it may further be mentioned, that the roach-fisher is always animated by hope of a double-barrelled kind—hope as to direct success with the particular fish he has in view, and hope as to glorious accidents that may at any moment bring him into combat with trout, perch, chub, barbel, dace, bream, or, now and then, pike. In rivers where all these are to be found it is true our fine art friend as often as not is a victim to his principles, first of which is a tight line. I have seen a two-pound trout, and a four-pound bream beautifully killed by a tight line and long Carolina cane roach rod, but smashing up is a much more common termination of these unequal struggles. Still, there are such uncertainties to add a charm to roach-fishing, and a very pretty mixed basket sometimes varies the rule of the game.

The habits of the roach to a large extent determine the methods of its capture, and no man will obtain a degree entitling him to take brevet rank who is not familiar with them.

A learned tome which I once read treated of the brain power of fresh-water fishes, and placed the carps, or *Cyprinidæ*, lowest on the list. As the roach is not the quickest witted of the family we may, therefore, to some extent agree with the old-fashioned writers who dubbed it the water-sheep. Yet not so very sheepish after all, if by the expression is meant silliness. The perch and pike, when thoroughly on the feed, commit the most astonishing stupidities. In their primitive state, before they have been much worried by the angler, roach are, no doubt, easily taken in, and even done for, but once let them become indoctrinated into the enemy's plan, as they soon will be, and it is very difficult indeed to restore them to that feeling of innocent confidence which was their original state. You may worry a shoal of perch to-day, or ravage a flock of bream to-morrow; may thin out the dace merrily foraging in a running stream, and may yet come again, before a long interval has passed, and find them in a liberal frame of mind. Not so with roach. With them it is generally a clear case of 'once bit, twice shy.' At rare times, however, the shyest may be surprised, and these occasions are what the artist has to find out by careful study and accumulating personal experience.

Much of the contempt which salmon- and trout-fishers entertain towards what we have got to speak of as coarse fish arises from early experience of their simplicity. Most of us, I suppose, as youngsters—most of us, that is to say, who have begun the descent from the summit of the life journey—either caught roach, or witnessed their capture, in quantities. Before we were allowed to handle a gun or break into other sporting domains, we had free run of some pond or stream from which, morn and eve, we were seldom sent empty away. I have often compared notes with angling brethren upon this matter. Very interesting is it to do so at luncheon-time on a bad day upon a well-fished water. With all the improvements in the way of appliances, with all the cunning born of years of practice, you meet under the clump of elms and confess your disappointment. At such time some one is almost certain to casually

remark that as a boy, with the rudest of tackle, he scarcely ever failed to do something, and occasionally something tremendous. Those days are now gone, except in remote country districts, never to return. All manner of things have happened since then. Our entire water system has been altered by drainage. The good places have been swept out by poachers, or fished to death by hordes of anglers. The grand spirit of improvement of which we hear so much has played mischief with both land and water sport in many respects, while the multiplication of anglers a thousandfold, simultaneously with the increase of facilities for travelling, is of itself enough to account for the difference between then and now.

Truly there was little art in those early 'takes.' I can recall with vivid memory the primitive two-jointed rod made by a rustic wheelwright, the line of fine whipcord never attached to winch, the hooks coarsely whipped to two or three strands of horsehair, the clumsy bit of lead employed for sinker, the common float, half wood and half quill, and withal, the gallant strings of roach by such primitive equipments taken. Yet there must have been somewhat of skill necessary, for I have recollection of studying the haunts of the fish, and being generally certain where to find them. Very soon I knew that the first clause in the agreement must be to keep out of sight and keep quiet, doing everything by stealth, and never overdoing anything. These precautions come as it were by instinct to the sporting nature, and they never come at all to others who are not of the mould, let them be as full of book theory as they choose. There were certain primary methods thus acquired which I afterwards found in the angling books, and which must always hold good in roach-fishing, comprising in a fashion as they do the superstructure upon which all must be raised. The best time for roach-fishing, to wit, is early morning and late afternoon and evening. White paste made with clean hands from yesterday's bread, and worked up to a consistency that asks no cotton-wool to keep it upon the hook, is a bait that will take a quantity of beating. The angler must keep his shadow from

falling upon the water; drop his bait gently in, the float sliding down to its position, without splash or ripple; never permit the line to dangle on the surface; make sure of his strikes in the firm belief that pricked or lost fish alarm the shoal; and play the hooked roach until it may be landed without commotion on the top.

These were amongst the leading doctrines of a boyish creed, and leading doctrines they remain. Creeping through the dewy grass as soon after daylight as possible, experiments were commenced at an alder bush overhanging the little river. A bit of paste, pea size, would be dropped into the water. This, all the while crouching out of sight, I would anxiously watch. Deeper and deeper sank the little pellet in regular disappearance. What I watched for was a sharp twitch of the white object, followed by its instantaneous disappearance, for this indicated not only that the roach were there, but that they were on the feed. If the decoy bait was snapped up quickly, the float would be adjusted to keep the hook in mid-water. Three-quarters deep was the best condition of affairs, and if there was no twitching of the preliminary paste I generally resigned myself to a poor bag, and was seldom disappointed. When the mill people began work at six o'clock, as indicated by a drowsy waterwheel monotone two furlongs up, business commenced in real earnest, and it would be a very unsuccessful morning that did not give me a couple of dozen roach averaging a quarter of a pound each. The moral of this personal reminiscence is this: Had I afterwards abandoned the practice of roach-fishing, I should probably have gone through the world under the impression that the roach *was* a silly sheep to be had for asking by anybody.

Having looked at that picture, let me invite the reader to look on this. Here is a reach of water meandering at speed of say two miles an hour through a meadow. We know it to be full of large roach. Any ordinary cast of the net shall bring up a bushel of great fellows, between three-quarters of a pound and a pound. Yet, of six or eight anglers who have

the right of fishery, not more than two can boast of anything like success, and their method is entitled to be designated the fine art of roach-fishing. The fact is that these fish are educated, and rendered habitually suspicious and shy. Once or twice, perhaps, in the course of the summer they lose caution, and bite ravenously at the baits which they have steadily refused for the rest of the season, yielding, as it seems, to a caprice which cannot be explained. Otherwise, they must be circumvented by sheer skill on the part of the angler, a skill that may almost be said at times to partake of the nature of inspiration, so impossible is it of acquirement by many imitators. Knowledge of the habits of the roach, of the peculiarities of the particular river fished, and of the food incidental thereto, is a primary essential as I have already indicated, but to this must be added a masterly use of the finest tackle, an infinite patience, and a readiness to bring into the service innumerable wiles that shall meet the changing circumstances of the hour.

'He's a born roach-fisher' is a saying you sometimes hear; and I am not at all sure that, with some experts, it is not a perfectly warrantable expression. To such a man innumerable touches of skill come by intuition. But I have generally noticed that these 'past masters' in the craft of roach-fishing, the fine artists, do not arrive at their stage of excellence by any royal road. They have devoted themselves to the study and practice of roach-fishing. All the angling propensities they have are concentrated upon that one humble branch of the art which Walton, with roach-fishing in his mind, no doubt, spoke of as the contemplative man's recreation. I am acquainted with men, rich and poor, learned and ignorant, somebodies and nobodies, who have a passionate attachment to the pursuit. The higher kinds of rod-and-line work have no joys for them. You may battle with your salmon in a rushing Spey pool, craftily take a Test three-pounder with floating dun on ooo hook, and be an adept with spinning apparatus for all they heed or care: give them their camp-stool and roach rod over

the dark water that moves slowly above a clear bed, and they ask no more. The best roach fishermen I have ever met have possessed strong concentrated tastes of this nature.

It is not necessary in this chapter to enter at length into the thousand and one instructions which have been written for the roach-fisher's guidance. One man has this plan and another that. Fishers of every grade sometimes agree to differ, and some do not 'agree,' but differ all the same, and none more perhaps than the knights of the roach. The field of dispute is limited, to be sure; nevertheless, I have known fierce controversies rage respecting a bit of paste, jealousies aroused by advocacy of a maggot of too mature an age, and friendships endangered through a split shot. Many of the theories entertained on the question are good for nothing—mere fancies that satisfy nobody, least of all their authors. Therefore I shall say nothing as to the respective merits of Thames style, Lea style, or Trent style, though, if I did pronounce an opinion, I should not place the Lea artists second. It has been the custom, because one or two angling writers years ago, with a pardonable partiality for their own beloved river, pronounced the Thames anglers cock of the walk, to give them the premier place. For myself I should, taking experts from the three rivers, be inclined to bid them toe the line, and shake hands on absolutely equal terms. There are anglers from each who have elevated roach-fishing to a fine art.

The commonly accepted principles governing the sport may be perhaps most conveniently indicated in an imaginary visit to a river. The stream which I select has been already suggested on a previous page as being full of big shy roach. It actually exists, and there are doubtless some readers who will recognise it. It will serve our purpose as well as any other, as a peg whereon to hang a string of hints. Here then we have a meadow with river frontage of about 300 yards. At the upper end the water enters from a canal passing at one right angle, with a tributary brook arriving from another. On the meadow side the stream is too swift for steady roach-fishing; across,

the bed has silted up, forming a pronounced shallow. Right away down to the end of a meadow, where a weir and tumbling bay radically alter the character of the river, the depth is an even four feet in the middle, with but slight difference towards shore. As it is the keeper's business to see that certain swims are cleared out, the fisherman is saved the trouble of prospecting up and down with his plummet in search of a favourable place. Upon the general character of swims I shall have something to say presently, my object at present being to indicate the tackle used, and the way in which it is handled.

Mr. A. is a consummate roach-fisher; so is Mr. B.; and we have them both approaching the water. Both begin by throwing in ground bait, A. a ball as large as an orange, pitched into the centre, B. several balls of walnut size pitched here and there. Both of course cast their material well above the station upon which the seat will be. Notice the hushed style of their procedure: They move as if in a sick room; by force of habit, they stand back into the meadow and put together their rods. Cautiously stooping, they approach to plumb the depth, creating a minimum of disturbance in lowering the lead to the bottom. Upon this operation A. and B. evidently hold different opinions, for the former adjusts his float so that the bait shall dot and carry one upon the bottom as it travels, while the latter gives a fair two inches of free space. Had they not known that the fish were there or thereabouts, they would have done wisely to cast in their ground bait two or three hours before they began, and in the case of still water, where the stuff should be scattered in loose handfuls, and not in balls, ground-baiting overnight would have been attended to. But the roach being somewhere in the neighbourhood will soon espy the bran particles floating down, and will head up to see whether bulk and sample correspond.

Our friends A. and B. have divers tastes as to rods, you will also observe. A. uses a 20-foot cane rod, finely balanced, and though delicately tapered, rigid in the strike. This is the prime necessity of a roach-rod, and an essential often missed

by the maker. You sometimes see a rod that seems to be faultless; but at the strike, which is everything in roach-fishing, the top, without being actually whippy, vibrates so that the line is for an instant beaten down, instead of tightened with a pretty sound like that of a harpstring. That instant is fatal. B. has a shorter rod, but it is of cane, with the ordinary top of approved action. Cross-question these men, and they will tell you that they had much trouble in procuring rods with the particular action they required. Though the joints may to the eye be precisely the same, there are variations of temper perceptible only to the artist. Once obtained, the correct thing should therefore be treasured. B. however uses running tackle, a fine Nottingham line on a plain ebonite winch. He does this because there is always the chance of a large chub, and he would adopt the tight line, which A. regards as an article of faith never to be departed from, if there was wind to bag out the slack through the rings. Then, though the two floats are shotted down to a third of an inch, the floats are not alike. A. has a porcupine, and B. one of those quill combinations which admit of the insertion of shots for the purposes of cocking. He has three shots only therefore on the footline below the float, placed at intervals of six inches. A., who believes in hugging the ground, has six or eight shots evenly distributed at two-inch intervals. He has reason on his side, I think, in explaining that the whole arrangement is kept straighter and closer to its work by this method. Most anglers pay too little attention to shotting, massing their shots together, and leaving a glistening dint or conspicuous gash after the application of pliers or teeth. Then as to hooks, A. affects a stoutish wire and moderately short shank, insisting that every part of the hook should be covered; B. a thin wire with long shank. But the hooks were small (No. 12 Pennell pattern and No. 13 Carlisle) respectively. A. fishes on without increasing his ground bait, and uses paste. B. throws in a nut-sized morsel occasionally ahead of his float before renewing the swim, and baits with two gentles, getting, as a matter of fact, dace,

medium-sized roach, and being run out eventually with a chub, which he would scarcely have killed without a reel line.

A. meanwhile, by dint of patience and a frugal use of ground-bait, gets after a while amongst the three-quarter pound roach, and keeps among them for an hour or two. He misses with some strikes, mistaking a drag on the bottom for a bite, though this is no more than he expects, and his rule is to strike at the slightest movement of his float. Should it seem to pause ever so faintly in its steady swim, the top of the rod, always about a foot from the water, strums upwards as if by an involuntary movement, and a fish is hooked. Should it slant slightly, the same result ensues. To the unaccustomed eye there has been no bite, but it has been plain enough to the artist, as the issue indeed is to the roach.

B. truly enough urges that he is saved endless exertion in the course of a day by keeping his bait clear from the bottom, and as, thanks to his dace and chub, he can show at the finish as heavy a bag as his friend, there is not much to be said. As they leave the meadow they discuss the vexed question of gut *versus* hair. A. uses hair, to procure which as he requires it is the trouble if not the object of his life. B. declares that, what with the nuisance of getting it, and the treachery of the knots, the game is not worth the candle. For these reasons I always use fine gut, or in very clear water the less desirable, because uncertain and rapidly destructible, drawn gut. Yet I must confess that A., who is the best roach-fisher on the water, and all the really crack men I have seen—the men who are roach-fishers pure and simple, making it a study, and retaining it to the end of their days as a passion—swear by chestnut hair and tight lines. I never heard of a Lea champion who would admit the superiority of gut over hair. Of the various explanations advanced in favour of hair, which is the bulkier strand, the one which in my opinion is most cogent is the power it has of repelling those globules of water which hang around the finest gut.

The baits for roach are legion. Simple paste, and well-

scoured gentles are the stock lures that will never go out of fashion, with small red worms for winter, caddis for early summer, wasp grub for late summer and autumn. My friend, Mr. Marston showed me a device which should be worth trying for paste-fishing—two of the smallest hooks brazed together, and one eye. No whipping on of gut is required, and a pellet of paste no bigger than a pea envelopes the whole. There is no rule by which the proper bait to use can be regulated. One hour the roach will take one thing, the next another. To-day they will bite at any of the familiar baits—paste plain or coloured, rice, wheat green or boiled, malt, pearl barley, silkweed, gentles, worms, caddis, meal worms, ant eggs, grubs miscellaneous, and insects. To-morrow they will touch never a one. A 'new sensation' in the way of roach-bait was announced a couple of years ago. It was the fleshy part of the banana. I gave it a trial with fair results; the experiment repeated subsequently and in the same water, and under similar conditions failed. Still there is one advantage in banana bait which cannot be claimed for worms, gentles or grubs; *you* may eat it if the fish do not.

As to ground bait, generally too profusely used, the most important point is to have it thoroughly mixed. The carelessness characterising its compoundment is proverbial; hence the best roach-fishers do not think of entrusting the business to other hands than their own. If bran and bread be used—and there is none much better—not a particle of the latter should remain unwelded to the bran. The whole secret is in the blend, and in the freshness of the material.

Mr. Pennell, in asking me to write this chapter, sent me a few notes upon what he terms 'fly-thrown bait' for roach and rudd, which he thought I might incorporate in it. I think I shall do better by letting him speak for himself. He says:—

For attracting both roach and rudd, and especially the latter, in ponds, I have sometimes found the following plan to succeed better than any of the ordinary modes of float-fishing, and, indeed, I have not unfrequently made a basket by this means in places where the

rudd were looked upon as very shy and 'uncircumventible.' This happened last autumn in a piece of still water belonging to my friend, Mr. Wykeham Martin of Leeds Castle, who, if he took up fishing with the same energy and success that he has shooting, would, no doubt, soon become the best fisherman as he is admittedly the best shot in Kent. There were plenty of rudd in the pond, for they could be seen swimming and basking, (it was a bright hot day,) on the surface. To the every-day temptation of gentles, and paste, offered them in the orthodox way, that is, with a float and shotted line, the fish appeared to be quite insensible. It seemed therefore that as they would not be induced to come to the bait, the only chance was to take the bait to them. 'If the mountain won't come to Mahomet, &c.' The first difficulty was to get the 'ground-bait,' so to speak, to become a 'floating bait.' This was accomplished by tying half a quartern loaf to a string long enough and a stone heavy enough to anchor it at the bottom of the pond in a favourable position, about ten yards from the bank. By the time the rod and line were adjusted, my *pièce de résistance* had attracted a considerable number of intending diners, who were quite prepared to receive kindly any fresh *plats* that might be offered them. The tackle, however, had, of course, to be suited to the novel sort of 'ground' or rather 'floating' bait, and this is what it was:—a single-handed fly-rod with a light silk running line, and a cast of the very finest trout gut with a No. 2 hook of my pattern at the end; no shot; and no float, properly so called, but instead a piece of cork the size of a large pea about one and a half feet above the hook. With this tackle,—which I cast, of course, overhand, as in fly fishing,—I was able to drop the bait within a radius of a few inches or feet of the centre of attraction, and had soon two or three dozen fine rudd in the basket.

Another method is to dispense with the cork altogether and simply let the 'fly-bait' sink gradually, trusting to some motion of the line to indicate a bite, or, failing that, striking gently after about a minute, according to the depth of the water. Both these plans I have found very killing. The first I published some twenty years ago; and at Slapton Ley—the happy hunting grounds of the rudd-fisher—I find it is now very generally in use, as well as the 'fly-thrown bait' without any cork 'indicator.'

In this manner, and using the floating 'ground bait,' Signor Abaurré, my wife, and myself, caught during the present month (Oct. 1885) 178 rudd, the largest weighing 1½ lbs.

The fly-thrown bait (without, of course, any bread-floating addition) is a very good method—the best I know—of catching bleak in rivers; though even in this case it is better to choose a spot where the current is not very strong; and wetted—not soaked—bran thrown in occasionally, will keep the bleak on the feed and indicate their whereabouts.

Roach-fishing as a fine art must, as Mr. Pennell's notes remind me, be taken to include rudd and dace. The rudd, in my estimation is a handsomer fish than the roach as gold is handsomer than silver. And so far as my experience goes he is a bolder biter, when he is in the humour. By which I mean that he is oftener in the humour. On several occasions, in lakes where both rudd and roach occurred, I have taken three rudd to one roach, and in rivers also it has been my experience to find the rudd yielding first blood, and to yield longest. The rudd is also a freer taker of the artificial fly. Roach will take the fly when cleaning after spawning, and when therefore they ought not to be taken, and at any time when you can get them on the shallows. On a summer evening after a hot day, if you can find them lying upon the surface, with a small black or red ant, or a gentle whipped out with a fly rod, you should get sport. Some years ago in a trout stream from which it was desired to clear out the coarse fish I killed over 20 lbs. of roach, from four ounces to half-a-pound, with a March brown. Although it was in the middle of June, they would take no other fly. The fish were amongst the weeds close to the further bank where the stream ran slowly, and I did not rise from my knee until my basket was full. They were taken with a long line down stream, the fly pitched upon the opposite bank and allowed to drop into the water. If the fly was not taken at once the whole shoal seemed to follow it out until one of them snapped at it boldly. The first fish I hooked and lost put a period to the proceedings. Rudd, however, will take small flies freely in July and August, and upon the Norfolk Broads I have had excellent fun with them in the evenings.

The Dace is the most enterprising member, not only of the

genus *Leuciscus*, but of the family *Cyprinidæ*. I always class him with the fly-taking fishes, though he is more strictly speaking a bottom feeder. Many an hour's delightful relaxation do I owe that merry little fish, with dry fly and wet fly, up stream and down stream. In bottom fishing he may be proceeded for as with roach, though gentles and worms suit his palate better than paste. He is good enough to roam about so that he may be found in swift water, shallow water, deep water and slow water alike. He herds amongst the barbel, as every barbel fisher discovers; he rises amongst the trout. I have taken him with a lob-worm and with a May fly, and when, as has frequently happened, he attained the dimensions of half a pound, he has rejoiced my heart, as the so-called coarse fishes seldom do. In the year 1883 I had a great take in a private water on the Lea to which a friend kindly invited me. On a gravelly shallow at the tail of a mill pool both dace and roach lay in numbers, and the roach on that occasion took the fly—it was the Thames dace fly called I believe the Petersfield fancy, a polyglot hackle shod with a shred of white leather—as readily as the dace. I have lived for many years in hope of catching a pound dace. Once I thought I had him, but as it required a penny piece (a very dilapidated specimen) to plump down the scale, I perpetrated the error of not having him stuffed. It is not likely I shall ever get nearer the mark. The largest roach I have taken was a shade under 2 lbs., but I may here put on record, as the weight of roach is a subject of frequent dispute, that in the summer of 1884 a specimen was brought to the *Field* office, guaranteed by a well-known London taxidermist to be 3½ lbs. And from its size it was in all probability quite as much.

Finally and to conclude. Many dodges, only learned by observation and experience, are essential to roach-fishing of the most artistic kind. You may take roach by tight line or running tackle; in clear water and in thick; by float or fly, gut or hair; legering on a clear bottom with the tails of lob-worms, or roving and sinking with a maggot or house fly, but—let me

repeat—no angler can call himself a roach-fisher who does not fish with the finest and neatest tackle, keeping quiet and out of sight the while; who is not ready from morning to night to possess his soul in patience, and—who never admits that he is beaten.

REDSPINNER' (W. SENIOR).

NORFOLK BROAD AND RIVER FISHING.

THERE can be no doubt that the Norfolk rivers with their adjacent Broads present a greater extent of fishing ground for coarse fish than any other district in England, and the average sport enjoyed on them far exceeds that obtainable on other waters.

Putting the Broads, properly so called, on one side, there are at least eighty miles of free fishing water, the takes in which are not counted by the pound or by number, but by the stone. Yet it is a curious fact that while sport of such a character is enjoyed by the native angler and by those visitors who have learned the ways of the natives, strangers coming down, however skilful anglers they may be, have but indifferent sport. This is due chiefly to ignorance of the best places under different conditions of wind, weather, and tide, and to the non-observance of certain well-defined methods of fishing, which the depth of water and strength of current render necessary. In all these miles of free fishing the rivers present to the eye much the same characteristics—broad, placid streams with marshy banks and uniform currents—so that to one unacquainted with the locality one spot looks as good as another. Yet this is not so. The depth varies; there is an imperceptible eddy in one part, where the fish gather with the tide one way, and which they may forsake when the tide flows the other way. The bottom may in one spot be fairly clean, and ten yards away be very foul. A knowledge of the contour of the river bottom is most essential to successful angling, and this knowledge is not obtainable without the aid of local experience. The appearance

of the banks affords no reliable indication of the depth of the water a few feet away.

The Broads are not so inscrutable, but nevertheless present certain characteristics which must be borne in mind. Fishing on the actual Broads is a matter of leave. The riparian owners lay claim to the exclusive right of fishing even on those Broads which, in addition to being navigable, are affected by the rise and fall of the tide. Those which have never been used for navigation are of course private, and as the navigation on others falls into disuse, owing to the growing up and shallowing of the waters, the riparians assert their rights. Oulton Broad, near Lowestoft, is practically the only one which the public now fish without let or hindrance. A good deal of fishing goes on in Wroxham Broad, but steps may at any moment be taken to put a stop to it. This uncomfortable state of things has grown up in consequence of the immense increase in the number of anglers of late years. Nevertheless, it is not a difficult matter to obtain leave to fish many of the Broads, and they are still sufficiently frequented by the public to be considered as angling resorts.

The Broads are in reality shallow lagoons from ten to four hundred acres in extent, with weedy bays and reedy promontories, having, as a rule, bottoms composed of exceedingly soft and deep mud. The rivers are generally deep, being from twelve to twenty feet in the channel; but it is difficult to fix on a spot on any of the Broads where there is more than seven feet of water, while generally speaking there is but three or four feet. Parts of Wroxham and Oulton are deep, and the best spots for angling are well known, the deepest water being chosen.

As far as angling (which in Norfolk means bait-fishing, as distinguished from pike-fishing) is concerned, the free rivers afford quite as good fishing as the private Broads.

Mention has been made of the tides. Now the fall of the Yare from Norwich to the sea—twenty-six miles—is barely four inches to the mile, and the other rivers are similar. The flood-

tide is salt for the first few miles from the sea, gradually becoming brackish as it meets the river water, which it drives backward with it. For twenty miles at least from the sea there is a strong upward current at flood-tide, and a slight current right up to Norwich. None of the fresh-water fish—pike, roach, and bream—mind a little taste of the salt water, provided the change comes gradually; and the largest bream are found where the water is decidedly brackish, both on the flood and ebb. Occasionally, however, a higher tide than usual brings with it a more sudden influx of salt water, which, surprising the fish, kills a good many, particularly the pike, and drives the others up stream and up the dykes into the Broads. Such an influx of the 'salts,' which happens in a greater or less degree every year, changes the aspect of the fishing for a time. A week or two before the date of writing this (November 1884), the pike were being taken in large numbers and of goodly size in the Yare between Coldham Hall and Cantley. There came a salt tide, which destroyed many, and drove the others away, nobody knows where, or perhaps sickened and put them off the feed. At all events none have been caught since.

Then there is sometimes a land flood, which brings bitter water, or 'marsh tea,' off the marshes, and this drives the fish into the lower and deeper waters, or into the Broads. A few years ago Oulton Broad became crammed with fish, owing to a flood on the Waveney, and the sport obtained for a few weeks was something extraordinary.

Thus the angler has got to follow the fish according to the exigencies of tides and floods, being guided by the reports from the fishing-stations. There is no difficulty as to this, for so many anglers are daily out in all parts that the news as to where the fish are rapidly spreads.

Although the number of anglers is tenfold greater than a generation back, yet the average takes of fish are not much less than formerly, and whilst, owing to the extensive drainage of marshes and silting up of broads, the feeding and breeding grounds of the fish have largely decreased, the abolition of net-

ting and suppression of poaching have apparently struck the balance.

The River Yare is free to the public from Norwich downwards. Just below the city, at Trowse Hythe, and Thorpe, good sport is often obtainable, particularly among the bream; also with pike, when salt tides have driven them up the river. The first fishing-station of importance is Surlingham Ferry (six miles from Norwich by the river), in the neighbourhood of which are many good roach swims; but the deep-water places are limited, unless you moor in the channel, which is to be deprecated, both on account of the hindrance to the navigation, and the personal danger to oneself of being run down by one of the large sailing barges called wherries. Two miles further brings us to Brundall, where there is a railway station. This is a favourite resort of anglers, and owing to the extremely sinuous course of the river it is always easy to get a good 'lee' wherever the wind blows from. The meaning of a 'lee' is that care is always taken to moor where the water is sheltered from the wind by the bank. This shelter is most desirable, as the river has an average width of fifty yards, and a strong wind blowing down or across a reach gets up a good sea on the leeward shore.

For some distance below Brundall there are many shoals, and boats look as if they were moored in the middle of the river, but they are in reality only on the edge of the channel. Buckenham Ferry, ten miles from Norwich, is the next rendezvous where there is a railway station. From here to Cantley, three miles further, the influence of the tide becomes strongly felt, and there is good deep water in many places close to the banks. From Cantley to Reedham the current becomes stronger and the water deeper, so that lines have to be heavily shotted for float-fishing, and legering for bream is the most productive way of fishing for the large ones. Reedham, which is seventeen miles from Norwich, and ten miles from the sea, may be said to be the limit of angling on the Yare.

From Reedham a straight canal three miles long makes a short cut to the river Waveney at Haddiscoe, its lowest angling

point, ten miles from the sea. Here, as the tidal current is strong, legering is more suitable than float-fishing.

Somerleyton, two miles further up the river, is noted for its large bream. A few miles further is a wide dyke or canal leading on to Oulton Broad, and both in the dyke and on the broad there is good fishing for bream, roach, and pike. From Oulton Dyke the Waveney up to Beccles is a splendid river, broad, deep, and clear. This river used to be noted for its perch, but perch do not seem to be so plentiful in the Broad district as they formerly were.

All the rivers converge and run into the sea through Yarmouth Haven, and proceeding up the Bure, locally called the North River, we find a tide so strong that there is not much fishing for some miles up. In fact the first easily accessible fishing-station is at Acle, twelve miles up the river, where good catches of bream are often made. Above Acle good fishing may be got in almost every reach. At the mouth of the Thurne is a good spot for pike, and the Thurne River, which flows from Hickling Broad, Horsey Mere, and Somerton Broad, is a nice clear stream containing plenty of pike, and has a fishing length of about six miles.

Proceeding further up the Thurne, past St. Benedict's Abbey, we come to the river Ant, a tortuous and canal-like stream, leading through Barton Broad to Stalham and North Walsham.

Continuing up the Bure, and passing South Walsham and Ranworth Broads, the fishing on which is private, we come to a favourite fishing-station, Horning Ferry; and from here up to Wroxham, some nine miles, is good pike ground. The water is shallower and less affected by the tide, also much clearer. Many Broads are connected with this portion of the river by short dykes, and these Broads serve as spawning-grounds and nurseries for the fish, and keep the river constantly replenished.

Such is a brief sketch of the extent of these happy hunting grounds for anglers for coarse fish. For greater details the reader is referred to a handbook and chart published by Jarrold and Sons, of Norwich.

The fish frequenting these waters are chiefly pike, bream, and roach. Perch are found here and there of large size, and are caught whilst spinning for pike, also by paternostering in some of the reaches below Wroxham. There is no close season in Norfolk, and when perch are spawning they resort in large numbers to certain well-known spots, where, sad to say, the Norfolk angler goes after them. An old tree partly fallen into the river, which was until recently a prominent object just below Wroxham Bridge, had always a crowd of perch around it at spawning time, and the catches there made would be notable ones to chronicle had they not been so unsportsmanlike. On some of the Broads, particularly on Oulton, you may get among the perch; but it is not a branch of fishing which has any distinctive peculiarities in Norfolk.

Of the three fish just mentioned the pike deserves first place. In private waters in Norfolk (generally known as 'Jordan' in answer to too curious enquirers) the pike is not only present in great numbers, but of great weight, and a dozen fish from ten to twenty pounds is not an uncommon take, while many larger catches are recorded. In the broads and rivers the pike are numerous, but not exceptionally large, a seventeen-pound pike in a broad and a ten-pound fish in a river being considered good. The largest fish taken recently in the open river was one caught at Cantley weighing twenty-four pounds. Fish larger than this are well known to exist in several places, notably two in the neighbourhood of Horning Ferry. I tried hard the other day for one which was always to be seen in a hole in a dyke about thirty yards long, ten wide, and twenty feet deep. It is known to be at least thirty pounds in weight, and I tried it with every imaginable bait up to a two-pound jack, and for a whole day, without success.

Another thirty-pound fish affects a shallow bay in a small broad, where he is often seen with a five-pound bream in his mouth. There is such a plenitude of bait that the big ones do not apparently trouble themselves to seek the angler's. I am inclined to think the large fish are not by any means so

plentiful as they were. The owners and hirers of private broads are too much addicted to the use of the trimmer, and several scores of these poaching abominations floating over a shallow broad are capable of much mischief, one or more being certain to be seen by every feeding fish. When the weeds are down the shallowness of the water affords no especial hiding or lurking place, and a fish runs through many temptations ere arriving at the weight of ten pounds.

In the rivers pike are numerous enough, and are almost always fished for by 'trailing' the spinning bait. This is elsewhere looked upon as unsportsmanlike, but there is excuse for it in Norfolk rivers if anywhere. Fishing from the banks is, generally speaking, out of the question, owing to their marshy and weedy character. A boat is indispensable, and as you cannot tell where the fish are within a mile or two, it seems most sensible to row in search of them, and this is the mode usually practised. The boat is rowed at a very slow pace—the slower the better, so long as the bait spins effectively—along the edge of the deep water or the weeds, according to the season. Thus, in the winter the fish come in the shallow water along the reeds at midday, and retire to the deeper water as the afternoon advances to a degree depending upon the temperature of the day. The clearer the water is the better, at all events in the reaches affected by the tide. If it is at all 'grey' or thick the pike will not feed. 'Clear' is of course a comparative term, as, except on the upper waters of the Waveney, it never reaches the crystal clearness of less muddy streams. Local assistance is most desirable even in trailing, as the depth of the water varies so much, without any surface indication; and the length of line, depth of the bait, and speed, as well as the distance from the shore, should vary accordingly. The bait used is usually an artificial one, and of artificial baits the time-honoured spoon is the favourite.

When the pike are on the feed a single rod may get from six to a score fish running from three to ten pounds by trailing, while with any other method of fishing he would not get one.

Even in the winter-time the pike 'draw out' of the river into quiet and secluded dykes, and in these places more sportsmanlike methods are followed. Just below Norwich there is a good-sized private dyke which is fished regularly about once a week. A dozen fish may be taken out in a short time, but after a few days' rest these places are supplied from the river, and the dyke is again worth fishing. On the North River, also, and its tributaries there are many spots, such as the confluence of the Thurne with the Bure, where there are always pike, and where you may fish all day with live-bait with as much profit as rowing about from place to place trailing.

Pike-fishing on the Broads is carried on differently. Live-baiting is most in vogue, and it is considered essential to take the bait from a different water to that in which you fish. Every endeavour is made to get dace, but these are not so easily procurable as roach. As two or three fishermen go together a goodly number of bait are necessary, and two and three score are taken, the price of the bait being one shilling a score, and they are procurable at many places in Norwich, where men make a regular trade of catching them. The rods and lines used are according to individual taste, but the reels are almost always Nottingham wood-reels, chosen rather because they wind up quickly than because casting is often done from the reel. If provided with a check to be applied when necessary it is not found that any difficulty arises from 'over-running.'

The usual plan is to moor about fifty yards from the reeds and cast towards them, and as each person has two rods a pretty good extent of water is covered all round. Heavy baits are used, and very long casts are made. After a cast with one rod the other line is drawn slowly in and recast, and so on alternately. If the spot is unproductive, another is chosen, and so on, working round the broad near to the reeds. Pike in these waters seem to rove about when on the feed, going considerable distances, and it frequently happens that the boat is never moved from one spot, the pike themselves coming within

range of the lines. The long casts are destructive to the baits; but this is not of much consequence, as baits are cheap. There is nothing distinctive in the tackle used. On waters where pike are plentiful those under five pounds are returned to the water, and of the others perhaps only a dozen are retained, it not being considered good form to take a tumbril-load away, as has been done before now from private waters when the fish were on the feed. When fish have to be returned snap-hooks are of course essential, but on waters where such restrictions are not observed live-bait gorge-hooks are much used. For one thing it is not easy to strike hard with forty yards of line out, and the 'bag' of the line possibly under the weeds; and for another reason, the fish are more securely hooked. When a man has two rods he will perhaps have a gorge-hook on one and a snap on the other, and then as likely as not forget which is which.

In Broad fishing it depends upon the sort of day whether the fish are in the weedy shallows or in the deeper and more open water, and actual trial of both is the only guide. Personally I have been most generally successful in shallow water, often fishing with less than a foot between the bait and the float in order to clear the weeds. A rough day is considered the best, as on a fine still day the boat is visible so far in the shallow water, and any vibration is more easily perceived by the pike. The live-baiting is varied by spinning, standing up in the boat and casting in the orthodox fashion. I have known a spoon thus used to take several fish out of water which had before been assiduously but unsuccessfully fished over with live bait. There is nothing distinctive about the spinning tackle or flight, Norfolk anglers following the lead of others in this respect.

I have never seen any one trolling with the dead gorge-bait; for these waters it has no advantage over live-baiting or spinning.

January and February are accounted the best months, as the weeds are down and the pike have an unimpeded view of

the bait from a considerable distance. Many ardent pike-fishers never think of going out until after Christmas.

I have only once seen the artificial fly used in fishing for pike in Norfolk; but from what I then saw, and my own experience on north country tarns, I think that a suitable fly would be very killing. It would be essential to have a fly that would float, and then the very broad stretches where the weeds are within two or three inches of the top, with interspaces where the pike lie, could be fished more easily than by live-baiting or by fishing. My idea is to float the fly by means of a cork body, but yet have sufficient lead weight in it to enable one to cast in the ordinary spinning manner, not as in fly-fishing. I feel confident that a fluffy, gorgeously attired fly, with a good deal of white and gold tinsel showing, would attract the attention of many a pike surfeited with roach and dace.

In the north of England I used to be very successful with goldfish as bait. A warm water pond attached to a manufactory was well stocked with goldfish, which could be caught freely with paste, and which made the best of live bait. If one could only obtain them in Norfolk they would ensure success. The great thing is to show the pike something new. Where bait are so plentiful the fish can seldom be really hungry, but their appetites may be tickled by a novelty. A proof of this is that whenever I have used the eel-tail bait it has beaten all others—that is, in clear water. It is hardly brilliant enough to attract attention in discoloured water. On Norfolk waters it is quite unknown as a bait, but it is undoubtedly a killing one.

Leaving the fascinating topic of pike-fishing, we come to what is distinctively known in Norfolk as angling—that is, fishing for bottom-feeding fish. It is a common notion among the old fishermen resident amidst the Broads that, while the pike and the eels may belong to the owner of the soil, 'angling' is free to all on any navigable water. This possibly arose from the fact that riparian owners thought the eels and pike of value, but considered roach and bream as worthless. When drag netting was allowed certain persons used to dispose of the tons of roach and bream

so caught for the purposes of food among the poorer classes, the waste fish being thrown on the fields for manure or sold to the crab-fishers on the coast for bait. With the abolition of drag-netting the fish ceased to be a marketable commodity. The great majority of anglers do not know what to do with the fish they catch when the sport of catching them is over. Too often they are thrown away and left to rot on the banks. More scrupulous anglers give them to the poor in their parish, but I cannot honestly say that the poor relish the gift. I confess to having taken somewhat of a prejudice against roach and bream fishing because of the inutility of the catch. No doubt, however, it has the same excuse for existence as fox-hunting—that is, it is a healthy exercise which affords a relief from sedentary occupations.

Both bream and roach inhabit Norfolk rivers in extraordinary numbers. Notwithstanding that every reach has its boatload of fishermen, and that as you sail by every one seems to be pulling in a fish, there does not appear to be any diminution in the quantity, nor does there appear to be any increased shyness on the part of the fish. Every season more anglers have been out, yet the average of the takes has been higher than formerly. Some idea of the abundance of the fish may be gathered by a visit to one of the shallower Broads at 'rouding' time—that is, when the fish are spawning in the spring. At that time the bream crowd into the Broads from the rivers in immense numbers. Surlingham and Rockland Broads, for example, are for a few days literally seething with the fish, which are so busily engaged that they take no notice of your boat as you force your way among them. Huge fellows of five or six pounds in weight root about in water which is hardly deep enough to keep them upright. As soon as they have spawned they quickly return to the river or to the deeper water, and their place is then taken by the roach; the latter, however, affect the dykes and are found along the grassy margins. In Rockland dyke I have taken them out with my hands, and with a landing net one might, if so inclined, speedily fill the boat.

There appear to be three varieties of bream here : the true bronze-coloured bream, or carp bream, which is most sought after, and grows to a large size (I have seen one eleven pounds), the 'bream flat,' a white, dirty little beast which shows no fight ; and a hybrid fish, supposed to be a cross between a bream and a roach.

As up to a certain point the preparations for bream and roach fishing are the same, it will be convenient to give one description of them, and separate descriptions of the subsequent proceedings. The most noticeable part of the outfit of the Norfolk angler is the huge 'frail,' or flexible basket which is intended to hold his catch. He has also a hoop net, which is intended to hang over the side of the boat in the water, and is to contain the fish and keep them fresh while the fishing is going on. Into this they are dropped one by one without any merciful knock on the head, and there in a struggling mass they suffer slow suffocation until the time comes for the catch to be counted and weighed. He has a bundle of rods and a large tackle-case, his shabbiest clothing and warmest coats, for he has to sit still for many hours. His boat is rough in appearance, but it is steady and safe, and extremely inexpensive to hire—a shilling or eighteenpence a day being the riverside charge. In the boat are two strong mooring-poles about seventeen feet long. The first thing is to fix upon a suitable 'lee,' the meaning of which has already been explained. Then one of the mooring-poles is thrust into the mud, and one end of the boat tied to it. The boat is then brought parallel with the bank, and the other mooring-pole is fixed and the boat attached. It thus lies parallel with the stream, and from ten to thirty feet from the bank, according to the depth of the water. Care must be taken not to get in the fairway of the wherries. This precaution is so frequently neglected, and fishermen are becoming so numerous that they form a serious obstruction to the navigation. Now and then a boat is run into, and it is only by good luck that no fatal accident has yet happened. The wherries are sailing barges of thirty to seventy tons burthen.

They are frequently navigated by only one man, and although the watermen are invariably skilful, and considerate towards fishermen, yet it is requisite for them to have the fairway kept open. They cannot turn and twist their craft about, but must keep their course; and it is incumbent upon anglers to keep out of their way. This is very easily done. The golden rule is never to moor off a 'scant' point. A wherry must, with a head wind, go as close hauled as she can; and if she is turning into a reach which is a head one, or 'scant' for her, she will go as close as she is able to the corner or point, so as to shoot as far as possible into the scant reach without tacking. Yet it constantly happens that just off that point a boat is moored. Avoid the points and you will neither hamper the wherries nor run any risk yourself.

The mooring-poles go very readily into the mud, but are very difficult to draw out again, the 'putty' being extremely tenacious. Therefore, do not send them in too vigorously. When well moored, the next thing is to plumb the depth, which is done very carefully in the usual manner. An apron is spread over the knees, a towel or cloth is at hand to wipe off the fishy slime from your fingers, and, rod and tackle being ready, the business begins. As the water is deep the swims are short and the cast frequent. There are usually two anglers in a boat—sometimes three—and they therefore have to cast in unison, or lines would get entangled.

If your pursuit be chiefly after roach, then the following local observations will be of use:—

As to choice of locality but little trustworthy data can be given. No precise rule, or at all events no discoverable rule, governs the movements of the roach at different periods of the year. Generally speaking, it may be said that during the summer they are found throughout the entire length of the rivers where the water is fairly fresh and not too brackish; but the finest fish and the greatest number are found between Coldham Hall and Cantley on the Yare, where the water is slightly brackish. Large numbers are also found in the dyke leading from Oulton Broad to the Waveney. In the cold weather they retire to the

deeper waters, and are sometimes found in quantities in the deep water known as Thorpe Broad, which is at the junction of the old river and new cut just below Norwich ; and they gather in deep spots on the Bure and other rivers, where they may be angled for with success.

The best period of the year in which to fish for roach here is from July to October ; but good catches are often had throughout the winter in fairly mild weather, and I have even seen enthusiastic anglers fishing over the edge of the ice. In the summer months the mornings and evenings are the best times, and as a rule but few fish are caught during the middle of the day. This is especially the case in bright warm weather, but on dull days the roach will often bite fairly throughout the day.

The morning up to 11.30, and from three to six or seven in the evening, are undoubtedly the best hours in the summer, while the middle of the day is best in the winter.

The best fish are found during the summer in the deepest water, in the Yare they should not be fished for at a less depth than nine or ten feet, and on the Bure in the deepest spots that can be found. In March and April they prefer shallower waters.

The direction of the tide does not of itself appear to affect them, except that they always work against it—swimming anyhow at the slack, and when it has changed swimming head to the stream. In some swims the angler gets all his fish on the flood-tide, and in other swims on the ebb ; but this probably results from certain local formations of the river-bed which change the set of the currents and eddies.

Ground-baiting for roach beforehand is never practised on the rivers, although it occasionally is on the Broads. The varying currents prevent it being of use in the rivers. The angler therefore trusts to keep the fish close to him by a continuous ground-baiting during his fishing. For this purpose the best ground-bait is composed of bran, bread and boiled wheat made up into firm balls about the size of an orange. One of these is thrown in occasionally, and, with the addition

of a few grains of boiled wheat scattered about, will usually suffice to keep a good quantity of fish about the boat. Another ground-bait is barley meal and flour, using a stiff paste made of the same mixture to bait the hook with. Cast the ground-bait in close to the boat, as it is sure to roll down the slope further into the stream. The distance up or down depends of course upon the strength of the tide. During the summer the most killing hook-baits are well boiled wheat and pure bread worked cleanly into a stiff paste, either left white or coloured red. In such clear waters as the Waveney and the upper waters of the Bure white paste is the best, but on the Yare the red always kills the best fish. In the autumn use gentles, and later on brandlings and gentles, or, better still, small red 'blood' worms. Many other baits are used with occasional great success, but the above are by far the most generally serviceable.

The rod in general use is a light stiff cane—one from fifteen to eighteen feet in length, though for running tackle a shorter rod will do. Running tackle is, however, seldom used, except on very shallow streams, where it is necessary to fish at a distance from the boat. It is a moot point whether running tackle has any advantage over the tight line, a little longer than the rod, which it is the usual practice to have. Some experienced anglers aver that for such deep strong waters as those between Coldham Hall and Reedham running tackle is decidedly to be preferred, while for the slower waters of the Bure and the upper reaches of the Yare it has no advantages worth naming. It therefore appears to be a matter of choice which should be used. The line which is fancied is a light plaited silk, with six feet of moderately stout gut and three feet of fine-drawn stained gut attached to it. A light, well-shotted line of this kind has many advantages, especially on a windy day. The float is a quill one, varying in size according to the depth of water, strength of tide, and wind. For deep swift waters a large pelican or swan quill is used; for slower and shallower waters the finest porcupine quill. The plan which has been in vogue with the Norwich school of anglers for many years past is to

attach the float to the line by the lower end only. It is claimed that this is decidedly the best, and that it admits of much greater neatness and accuracy in striking a fish than when the float is attached by the upper end as well as the lower. No. 9 hooks are used when the fish are of fair size, at other times Nos. 10 and 12. The hooks known as 'crystal' hooks are considered excellent for roach-fishing.

In the deep swift waters the line is heavily shotted, the float being of a corresponding size. About twenty medium-sized shot may be placed in a space of about a foot, the bottom one not nearer than about three feet from the hook, with just one shot on the length next to the hook. This arrangement ensures the bait being carried swiftly to the bottom and being kept steady, very important items in roach-fishing. It is somewhat difficult to detect the first symptoms of a bite when the water is at all rough. When good roach are on the feed the float is first affected by a slight tremulous movement, and almost immediately settles down, generally in a slanting direction; the moment to strike is just as the settling down commences—at 'half the first dip,' as an old angler once said to me. It requires a large amount of practice and some keen observation before an angler becomes expert in this, and it is in this that visitors generally fail, especially if the water is rough.

A friend of mine was one day pulling in roach as fast as he could bait his hook—and goodly roach, too—while a stranger in a boat close by had not caught one. At last the stranger asked leave to moor his boat to my friend's and fish his swim with him. This was acceded to, but the stranger still could not catch a fish. Yet he had plenty of bites, but in the rough water he could not discern them.

Sudden perky bites indicate small fish, and these are often the most difficult to catch. In float-fishing for roach the bait should be just touching the bottom. A good plan adopted by some is to fish with two hooks, the lower one dragging on the bottom and the upper one three or four inches clear of it. This is an advantage in a fast stream, as it retards the onward

motion of the float; the bait is more easily taken and the swims are not passed so rapidly. When the wind is strong and the water very rough it is difficult to fish, or even to detect a bite. This is very tantalising, and not unfrequently happens through a shift in the wind when you are in a capital swim. The remedy for this is to put on a nice light leger with three hooks, and with which excellent sport may sometimes be had when it would be impossible to fish in any other way.

Turning to the bream, which is after all the mainstay of the Norfolk angler, we find it uncertain in its movements. In the summer and autumn it affects the deeper and stronger waters of the lower reaches—on the Yare it is then principally found between Langley Dyke and Reedham—and in the winter and spring it prefers the shallower waters of the upper reaches, and is often found in good quantity in the vicinity of Thorpe Broad, and about Carrow and Trowse Hythe, immediately below the city of Norwich. On the Bure the bream appear to congregate in the Broads, and make their appearance about the end of May in the river. The best months to fish for them are July, August, and September, and in warm weather the best time is morning and evening. Commence with the first streak of dawn if you wish to have good sport, and you can then afford to go to sleep during the day. A friend assures me that he has had capital sport by *moonlight*. The deepest waters and quietest eddies are as a rule the best, but large quantities of fine bream are caught in the Bure at Wroxham in not more than four feet and a half of water. Of course the bait must just touch the bottom as it floats down stream. The fish bite best from about half an hour before high water to half an hour after, and flood-tide is preferred to the ebb. They are also supposed to bite better during the wane of the moon. For ground-bait use boiled maize, barley, or wheat; barley meal made into balls, chopped worms, and boiled rice. The latter and grains are found very attractive on the Bure. If there is a fair opportunity of doing so, and the stream is not too strong, places are baited overnight, and this is very successful on the Broads. The hook should be

No. 7 or 8, and lobworms and brandlings are the best bait, although red paste is found killing on the Bure. A brandling with a gentle placed on the point of the hook will sometimes be taken readily when no other bait would be touched. In the deep, swift waters at Cantley, Reedham, and Somerleyton leger fishing is the only method which can be practised with success. The best bait is the tail of a lobworm, and three or four rods may be used from one boat at the same time. The rod should be a stiff and strong one, with a good top joint, and a salmon-gut foot-line is often used when among the big ones. In float-fishing for bream it is necessary that the bait should drag the bottom, therefore the bulk of the shot should be placed nearer the hook. The float must be long and powerful, according to the water. As the bream bites more slowly and certainly than the roach, it is immaterial how the float is fastened to the line, and many prefer attaching it at the top and bottom in the usual way. A bream-bite affects the float with a slight bobbing motion for a few seconds, then moving it off and sliding it down slantingly. Strike as he runs off with the bait, or the float is about to disappear and you are sure of him. In legering it is not advisable to strike too quickly. Be sure to have the 'entlett' or weight heavy enough, as upon that depends much of your success. In all other respects the remarks respecting roach-fishing are applicable to bream, but bream are rarely taken in any quantity when the water is very clear.

Both bream and roach are affected by wind and weather. A south-west or north-west wind is the most favourable, particularly when the water is 'grey,' or thick. Capital sport has been had with a moderate east wind, but a strong wind from that quarter is fatal to success. Rain increases the chance of sport, but too thick water stops it.

In shallow water it is advisable to keep as quiet as possible in the boat. In deep water loud talking or laughter does not appear to frighten the fish, but knocking, or any disturbance which communicates a vibration to the water, is decidedly objectionable and causes a great interruption to the fishing.

For this reason it is a good plan to wear indiarubber-soled shoes or slippers in the boat.

Meeting three well-known anglers I asked them to give me particulars of their best catches of bream and roach. No. 1 said: 'I have done very little roach-fishing, but my best catch was 5 stone 10 pounds. My greatest catch of bream was 132 bream, weighing 212 pounds; but I have had several catches since of 112 to 140 pounds.'

No. 2 said: 'As to roach, my own experience runs up to five stone by two rods between 10 and 4. Of bream I have caught with a friend six stone between 4 and 7 A.M.; but I know of three friends who once caught twenty-three stone on one of the Broads.'

No. 3 said of roach: 'I have had some very fine catches, principally in the Yare. On one occasion at Buckenham with a friend, we caught six stone between 2.30 and 7 P.M.; another time upwards of five stone in the same space of time, and numerous catches of from two to four stone in an afternoon's fishing. Also more than a bushel by measure one afternoon with a friend in Oulton Dyke. As to bream, I have caught, in company with a friend, seventeen stone in one day on Wroxham Broad, and with only one rod each. I have heard of many catches from time to time of from four to twelve stone.' (Stone=14 pounds.)

The above experiences may be taken as typical among the native anglers; but the great majority of visitors are not by any means so successful. On my asking No. 3 angler why this was so, he replied, 'Through ignorance of the general requirements of tackle suitable for fishing in our waters; also of the *modus operandi*, one of the chief points being a want of knowledge of the right depth at which to fish. For instance, I have on several occasions found strangers fishing on the Yare in twelve or fourteen feet of water with their baits only four or five feet below the surface.'

Of other coarse fish inhabiting the rivers and Broads the rudd is the gamest, and is found in some of the Broads in great

numbers and of large size. The dace is increasing in numbers but as yet is not sufficiently numerous to be specially fished for. Tench are numerous and large in certain localities, but are rarely taken with bait. The same may be said of carp. Eels abound, and the silver-bellied species are caught in immense numbers in fixed 'eel sets,' while descending to the sea in autumn. Chub are, I believe, unknown in the Broad district, the staple fish of which are bream, roach, and pike.

The pleasantest mode of access to the various fishing-stations is undoubtedly by boat, that is by having a craft which you can make your floating home for as long as it pleases you. Craft of various sizes and rigs are easily to be obtained. Thus at Wroxham Mr. Loynes has a number of una-rigged boats, each having an excellent tent to fit over the open boat and transform it into a roomy cabin impervious to rain. He has also larger boats of the same rig up to ten tons, having a proper wooden cabin and fitted with many ingenious contrivances to economise space and add to one's comfort. Mr. Loynes' prices for the hire of these boats are reasonable, and a pleasant and economical holiday can be spent by his aid. River yachts of the ordinary type, cutter or sloop rigged, may also be hired, but as owners are constantly changing, it is of little use giving names. At the present time Bullen of Oulton always has yachts on hire, and the Secretary of the Yare Sailing Club, Norwich, usually keeps a register of craft to let. An advertisement in the local papers would always bring answers. Lately a number of the ordinary sailing wherries have been converted into pleasure craft, and most comfortable and roomy house-boats they make, and for a luxurious fishing excursion nothing could be more suitable. The hirer could fish early and take a sail for a few hours in the middle of the day. He could moor at his fishing ground, rise at five and fish until ten, have his second breakfast (his first should be taken immediately on rising), sail until two, lunch; and loiter, read, or fish until dusk; enjoy his dinner or supper, whichever he may choose to call it, and go early to bed.

The hire of a wherry varies from six to eight guineas a week;

this includes the wages of the men but not their board, which you have to provide. The accommodation consists of a saloon, bedroom, and lavatory, with fore and aft cabins for the men. The saloon, of course, becomes a bedroom at night. The small yachts have simply a cabin, and forepeak for the man, and the larger ones have a lavatory in addition. Their hire varies from four to six guineas a week, including man.

If, however, the angler does not care for a floating home, but prefers to take his ease at his inn, there are several good places where he can do so. It will be convenient to follow the lines of railway in our enumeration of these. The lines to Yarmouth and Lowestoft skirt the Yare and Waveney in a very convenient manner. Starting from Norwich and alighting at Brundall Station, you find within a stone's throw lodgings, boats, bait, and yachts at Flowers' boating station. This is not, however, an inn, as it is not licensed. Coldham Hall Inn is half a mile lower down the river, and proceeding a mile further across country you cut off the loop of river which encloses Surlingham Broad and find yourself at Surlingham Ferry Inn. At both the last-named inns fair accommodation may be had. The next railway station is Buckenham, and the inn at Buckenham Ferry is generally the most favoured by anglers on the Yare. The next station is Cantley, and the 'Red House' is a comfortable inn enough and is much frequented by anglers. Below Reedham the inn accommodation is limited, and from here to Oulton there is no place where accommodation can be relied upon, although quarters may be had at the Bell Inn, St. Olaves, near Haddiscoe Station, from which place Fritton Decoy, a large lake lying between Yarmouth and Lowestoft, may be fished.

At Oulton there are two good inns, the chief being the Wherry Hotel, kept by Mason, and the other the Commodore. The following tariff of charges at the Wherry Hotel will serve as a guide to the general cost of inn accommodation in the district:

Bedroom and sitting-room with spacious balcony overlooking the Broad, 2*l.* per week; a more retired sitting-room with

equally good bedroom, 30*s.* per week ; a single bedroom and use of the public sitting-rooms, 14*s.* per week. Breakfast, from 1*s.* 6*d.* to 2*s.* ; plain dinner, with joint and pastry, 2*s.* 6*d.* Fish and poultry extra. Boats, 2*s.* per day. Full bait, 1*s.* Man, 4*s.* The season lasts from June to the end of October. Out of the season the terms are somewhat easier.

On the Bure there are two good inns at Acle,—the King's Head, and Queen's ; but the best fishing station, especially for pike, is at Horning Ferry. At the Ferry Hotel, Mr. Thompson, the landlord, is a thorough sportsman. The nearest station is Wroxham, four miles away, and Thompson will meet the train with a conveyance upon being written to beforehand. At Wroxham there is the King's Head, kept by Jimpson, and lodgings are obtainable in the neighbourhood. On the Thurne there are two small inns, the Falgate and the Waterman's Arms at Potter Heigham ; and at Stalham, which commands Barton Broad and the river Ant, are two good inns, the Swan and the Maid's Head. Potter Heigham and Stalham are stations on the North Norfolk Railway, which runs from Yarmouth across to North Walsham, on the Norwich, Wroxham and Cromer line. Ormesby and Martham stations on the same railway command Ormesby Broad, where the Eel's Foot is the inn.

I am desired to suggest a route for a fortnight's fishing, but this is a suggestion most difficult to comply with. As I have already explained, the whereabouts of the fish depends much upon the tides, weather, and time of year. Supposing, however, one had a fortnight at one's disposal, I should recommend that a third of it be spent on the Bure, say at Horning Ferry ; a third at Oulton Broad, with an excursion to Somerleyton ; and a third on the Yare, say at Buckenham or Cantley. . . . But if the angler selects any place I have alluded to as a fishing station, the name of which may take his fancy, he will do quite as well as if he followed any set route. There is absolutely no choice, and if he determines the order of his going by the simple process of tossing up he will find the selection as satisfactory as he could wish. It often happens that an angler

going down to a well-known locality on the Yare or Bure for a day's bream-fishing, finds that these fish are not to be had at the place expected, but that roach, rudd, &c., are there in goodly quantity, whilst, on the other hand, anglers for roach will sometimes be surprised with a fine catch of bream. Instances of this kind are more frequent on the Yare between Buckenham Ferry and Hardley Cross, and on the Bure and broads below Wroxham. It is, therefore, advisable when fishing for bream in these localities, to be prepared with some suitable tackle and bait for roach, and *vice versâ*.

I append a list of what are considered to be the requisites for a day's fishing on the Yare, or lower reaches of the Bure, arranged with a due provision for such accidents as will occasionally upset the equanimity of even the most gentle disciple of the gentle art, and which, if unprovided for, will sometimes seriously diminish the sport and pleasure of a very promising day.

Tackle &c.

Rods (2).
Lines on reels or attached to gut ready for use.
Floats, 2 or 3, quill.
Gut, shotted ready for use, and a few lengths each of stout, medium, and fine-drawn, stained of a light brown colour.
Hooks, about a dozen of each, Nos. 7, 8, 9, and 10. Smaller sizes on fine-drawn gut.
Shot, an ounce or so of medium and small-sized.
Plummets (2).
Landing net and stick.
Disgorger.
Pliers, small steel.
Store net to hang outside boat for putting fish in.
Shore line, about a dozen yards of good strong line with a small anchor or an iron pin, with an eye, about 18 inches long, attached. Indispensable in the lower reaches of the Yare and Bure in windy weather, and without which it would often be impossible to moor the boat.

Baits &c.

Ground bait (see Roach and Bream).
Worms, brandling, with a few lobs.
Gentles, in tin (very secure) with bran or meal.
Paste, red, well worked and evenly coloured.
„ white, „ „
Wheat, well-boiled, for baiting hook and occasional ground bait.
Bread for making fresh paste, &c.
Red lead for colouring.

Not forgetting, if the weather threatens rain, a good-sized umbrella or a waterproof coat.

A creel, of course, is very handy for carrying such small articles as reels, winders, floats, &c., and for hooks and gut I know of nothing better than a fair-sized fly book, whilst for ground bait and bringing home fish, a good-sized frail basket with a strap or two to pass round it is about the most useful.

The quantity of bait required for a day's fishing by a single person may be reckoned up as follows :—

Wheat, about 2 lbs.; this when well-boiled will make about 4 pints.
Worms } as many of each as may be had for a few pence, say
Gentles } 6*d.* worms and 3*d.* gentles.
Ground bait, about 20 balls, each the size of a large orange.
Paste, red and white, each ball about the size of a small orange.

G. CHRISTOPHER DAVIES.

THE CULTIVATION OF 'COARSE FISH.'

WITH A FEW NOTES ON ACCLIMATISATION.

[I am indebted to the courtesy of the Marquis of Exeter, and of Mr. R. B. Marston, editor of the *Fishing Gazette* for the following highly interesting and practical notes on the cultivation and acclimatisation of coarse fish [1]—notably of the Black Bass,—subjects in regard to which too little attention has been hitherto shown by the owners of ponds, lakes, canals, and other waters, unsuited to Salmon or Trout.

It is probable that many of such waters, if properly stocked and judiciously farmed, might prove a success from a market or commercial point of view; but in any case, as Mr. Marston truly points out in the essay which here follows, to do something for the healthy and wholesome recreation of the toiling thousands of our mills and factories should be in itself an object well worthy of the philanthropist and statesman.—H. C.-P.]

SOME anglers affect to look down upon coarse fish and the sport they afford. I confess I *prefer* fly-fishing for salmon, trout, and grayling, but that is not always obtainable, and then I am content with the next best fishing to be had, whether it be for pike, barbel, perch, chub, or roach, &c.

An amazing increase in the number of anglers has taken place within the last few years. This increase has been large

[1] Lord Exeter's very successful experiments at Burghley House embrace *Salmonidæ* as well as Coarse fish.

among salmon, trout, and grayling fishers; it has been far greater among those who, not having the means or opportunity of fishing for the *Salmonidæ*, give their attention to our other freshwater species. A few years ago the angling clubs of London and the provinces could be counted by the dozen, now they number many hundreds with many thousands of members. But, while anglers have been increasing in this wonderful manner, the fish have been most certainly decreasing. The cry from the clubs is: How can we get fish?

Something must be done for these thousands upon thousands of anglers, for without fish their recreation is gone, and that they should be encouraged will be admitted by every one who gives the matter a moment's reflection. The larger portion of the coarse-fish anglers are working men and youths, mechanics, artizans, miners—toilers in our mills and factories in the great centres of industry—men to whom every inducement should be held out to attract them into fresh air and scenes in their spare time. How, then, is the decrease in those fish, in the capture of which they take such delight, to be stopped? and how can the thousands of miles of water which might yield them sport be replenished?

That these questions need answering at all proves that, in this country at least, very little has been done in the direction of cultivation of coarse fish, though, as a matter of fact, in the case of most of them it presents far less difficulty and expense than is attendant on the breeding of the *Salmonidæ*.

The first thing to be recognised is that, consequent on the great difference in the modes of spawning of the *Salmonidæ* and coarse fish, a widely different method must be adopted. Salmon, trout, and grayling eggs are non-adhesive, and each egg can thus be manipulated separately—they take months to hatch out. The eggs of the coarse fish are adhesive, making their manipulation extremely difficult—so much so, that while ninety-five per cent. of salmon and trout eggs can be hatched out, those who have attempted to treat coarse fish eggs in the same way have rarely succeeded in rearing even five per cent.

The eggs of the coarse fish hatch out in a very short time, a week or ten days being the average time required. If, then, we had to look to what is called artificial breeding to enable us to increase our coarse fish; the prospect would not be an encouraging one.

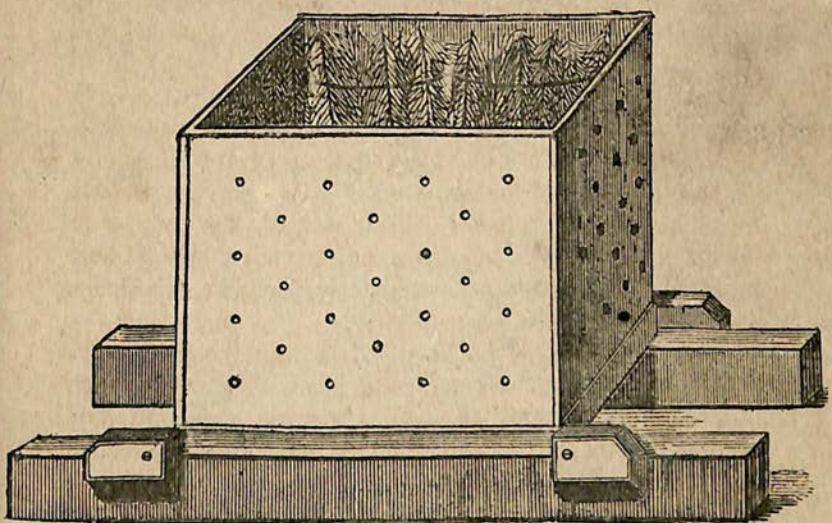
But, fortunately perhaps, artificial breeding is not necessary in the case of coarse fish; all we need do is to give nature a certain amount of aid, and she will do the rest for us. We must place the parent fish in suitable places for spawning, and then protect the eggs until the fry hatch out.

It is not only difficult, however, to manipulate the eggs in troughs and trays, but the difficulty of rearing the young fry is even greater still. They are hatched out as perfect fish, almost at once requiring extraneous food, and they are so extremely small that to feed them is a difficult matter. They appear to require that as soon as they leave the egg they should be able to seek their own sustenance on the almost invisible animalculæ present in their native waters.[1]

The diagram represents what is known in Sweden as Lund's hatching-box. It was invented more than a hundred years ago by a Mr. Lund, of Linköping. The Swedish inspector kindly furnished me with information about this box, which is in general use in Sweden. He says :—'Replying to your letter of the 25th of February, 1882, in which you request me to give you some particulars respecting Lund's hatching-box for the propagation of summer-spawning fish, I herewith hasten to give you all the information I can. Lund's apparatus is remarkable on account of its being, for aught I know, the first attempt in Europe to promote the propagation of the above-mentioned

[1] The umbilical sac, on the contents of which the trout alevin exists for six weeks, lasts the alevin of the coarse fish but a day or two, and unless the young fish are fed they will die; hence the difficulty of rearing them in confinement. Mr. Kelson, of Oxford, last year made the valuable discovery that the animalculæ bred in water containing decayed vegetable matter (like that in which cut flowers have been kept some time) are eagerly devoured by the young fry. I think it is difficult to over-rate the value of this discovery to the breeder of coarse fish.—R. B. M.

fish with human assistance. As you rightly suppose, the box is to be placed in shallow water near the bank, so that the water does not flow over it. Lund has not given any dimensions for his box, which may be of any size. The sides are hinged, so that they can be let down, and they are perforated with numerous small holes, so that the water can circulate through. The inside should be charred by fire to preserve



LUND'S HATCHING-BOX.

it. The bottom of the box and the sides are lined with fir branches. As you will see from the sketch I send you, the box should stand on blocks, so as to be raised a little from the bed of the water. With some modifications—for instance, it is not necessary to have the sides hinged—Lund's box has been adopted here in Sweden with success, and, in my opinion, for the hatching of perch, it is the most practical that has yet been invented. In a box of this kind, six feet square, and with sides two feet high, we place fifty female and from twenty to thirty male fish. These fish must be placed in the hatching-box as

near their spawning time as possible, and are taken out again as soon as the spawning is finished. The fish deposit the spawn on the branches. It is of great importance that the sides be well perforated, to ensure free circulation of the water. We use these boxes chiefly for perch, but they can also be used, with some modifications, for other fish.'

It is an easy matter to transport spawn which has been obtained in this way to almost any distance, as it adheres to the boughs; so that you can either let the fry develop in the box, and then go free in the water you desire to stock, or you can carry the fertilised spawn to some place, perhaps a hundred miles away, and then place it in a similar box in the water you desire to stock. In a week or ten days' time the fry will hatch out in countless numbers, and must then be liberated and allowed to begin their fight for life alone. In the Swedish exhibit in the Fisheries Exhibition, some models of Lund's box were displayed. These models were exhibited in the Berlin International Fisheries Exhibition, and are thus referred to, in the German Official Report on that Exhibition, by Dr. Haack, director of the great fish-breeding establishment at Huningue.

In dealing with the Swedish exhibit he says:—'In the Swedish exhibit there were two insignificant-looking models, which were quite overlooked by the majority of visitors, but which were of the very greatest interest to every thinking pisciculturist. These models, in spite of their simplicity and insignificance, show us the way we, in future, most simply, easily, and inexpensively may carry on the propagation of our summer-spawning fish to any extent.' He then describes the manner in which the box is used, and refers to its advantages as follows:—'As will be evident to every one, the eggs which have been deposited and impregnated in the box develop in a perfectly natural manner . . . air, light, and sun are able to exert their influences on the eggs in exactly the same way as if they had been deposited on water-plants in the open water in the ordinary way. Wind and waves can in like manner exert their beneficial influence on the eggs, which at the same time are protected

from the violence of the storm, from which cause alone millions of eggs are frequently destroyed in the open water. The sides of the box and the branches effectually prevent their destruction.' Further, the numberless enemies of the egg are shut out, for by placing a piece of wire netting over the top, the ravages of swans, ducks, and wild fowl—those great destroyers of spawn—are provided against. When I described Lund's box to a meeting of anglers at the Society of Arts Room in 1882, its manifest advantages for coarse fish culture were fully appreciated, and a society was formed with the object of renting waters and stocking them with fish, to experiment with Lund's box. Six boxes were made and used, and I think I may say that in spite of some errors inseparable from a first experiment of this kind, they proved fairly successful. Spawn in large quantities was deposited in some of the boxes, and large quantities of fry were afterwards observed in and around them. The only difficulty experienced was in obtaining the parent fish. From what I have seen of its practical working, I am perfectly assured that, provided you can get an adequate stock of parent fish, the Lund box is a most admirable contrivance for obtaining any quantity of fry. When obtaining your parent fish you will find that by far the larger proportion of them are females, in fact you will often experience difficulty in getting any male fish ; remember, too, that the males are, as a rule, much smaller than the females, and that, therefore, even the smallest, say even of three inches length, should not be rejected.

These boxes have since been most successfully tried on the Thames, the Trent, and the Lea ; and on the Kennet Mr. Frank Gosden, pisciculturist to the Duke of Wellington, now breeds millions of perch fry every year to serve as food for his young trout. The dimensions given by the Swedish Fisheries Inspector are too large, it is better to have them about half the width. It is also a good plan to have a door in the side to let out the parent fish after they have spawned

THE BREEDING-HURDLE.

Another, and in some respects even more simple contrivance for breeding these fish, is the breeding-hurdle. It consists of an ordinary hurdle, on which branches have been intertwined; it is sunk in a pond, lake, or stream, in any shallow undisturbed spot, and the fish find it a convenient place on which to cast their spawn, which can then be taken out and transferred to other waters, or left to hatch out. It is chiefly advantageous where natural spawning places are deficient, and is used to a considerable extent in France and Sweden.

POND CULTIVATION.

Where some primary expense is not a matter of consideration, the pond system, which is carried on to such an enormous extent on the Continent, is the best and most satisfactory of all.

It is the intention of the National Fish Culture Association to establish a coarse fish farm in connection with their fish culture establishment at South Kensington, for the purpose of hatching and rearing fry of all kinds in large quantities, for distribution to angling clubs and private individuals requiring these fish.[1]

The ponds, and the amount of water passing through them, should of course be adapted to the nature of the fish to be reared in them, and only one kind of fish, or fish similar in their habits, should be bred in a pond. As an instance of what may be accomplished with coarse fish in this way, I may mention that last spring Herr Max von dem Borne, the well-known German pisciculturist, placed about five hundred carp (spawners and milters) in one of his ponds, and in the autumn,

[1] The Association has taken the Delaford Fishery on the Colne, near West Drayton, and under the energetic supervision of the secretary, Mr. W. Oldham Chambers, a perfect system of ponds is being made.—R. B. M.

when he drew the water off before a large company he had invited to witness the result, more than eighty thousand fine young carp were found.

I have referred to the difficulty experienced in obtaining parent fish for breeding purposes; there are hundreds of streams and other waters in this country which contain coarse fish, which are considered by the proprietors of these waters as, I was going to say, vermin; at any rate, they do all they can to get rid of them, to make room for their trout and grayling. The National Fish Culture Association would find this a most profitable field to work. I am perfectly certain that the proprietors of trout and grayling fisheries would be only too glad to give the society all the coarse fish they could catch in their waters, and the very finest pike, perch, chub, roach, &c., are those which are bred in a trout stream. The expense of netting and fish-carriers would not be great. I am led to make this suggestion because, when on a trout-fishing excursion, I have often thought how welcome these shoals of despised coarse fish would be if transported to some of the depleted waters around London and other large towns.

Having described the methods in which coarse fish culture may be carried on, I will now give a brief general account of the natural conditions under which some of these fish breed—to give a complete list would occupy too much space. In coarse fish culture the more closely we follow the conditions laid down by nature, the more likely are we to meet with success. Being fully aware of the scantiness of our knowledge respecting the breeding of many of our coarse fish, I wish to disclaim any pretension to complete accuracy in what I state respecting this matter. I have got my information, such as it is, partly from personal observation, and partly from foreign works which refer to the subject.

SPAWNING TIMES OF COARSE FISH.

Nature of places they choose, and time it requires the young to hatch out.

The *Pike* spawns in February and March ; the eggs, which are small, hatch in from fourteen to twenty-one days, and are deposited on mud, rushes, sedges, and other water plants in shallow quiet bays and ditches. As in the case of perch, the female fish are usually more numerous and larger than the males.

The *Perch* spawns from March to May ; the eggs, which hang together in bands like rows of beads on a coral necklace, are very small at first, but gradually swell, and the young fish escape in from ten to twenty days according to the temperature of the water. The eggs are deposited on water plants and submerged boughs, and are then fertilised by the milt of the male fish.

The *Loach* spawns from May to July ; the eggs, which are deposited on gravel in running water, hatch out in about eight days.[1]

The *Carp* spawns in May and June ; the eggs are deposited on water plants, and hatched out in from fourteen to twenty days. There are three kinds of carp : the common carp (of which ichthyologists find three distinct species in England), covered with large scales ; the mirror carp, which has one row of very large scales along the back, and another along the side, the rest of its body being covered with a leather-like skin free from scales ; and the leather carp in which scales are entirely absent. Specimens of the two last-named fish, which are not common in England, can be seen in the aquarium of the National Fish Culture Association at South Kensington.

The food of the carp consists chiefly of the larvæ of water insects, worms, sprouts of water plants, and decaying vegetable

[1] One German writer states that the eggs are deposited on water plants, and on flat shallows.

matter. Kitchen refuse forms very fattening food for carp. To rear carp with the greatest success the parent fish should be placed in a suitable pond in which there are no other fish; after spawning the parent fish should be netted out, and in the autumn, under suitable conditions, there will be an immense crop of young carp from two to three inches in length. The carp is a powerful fish affording great sport to the angler, and its cultivation might be most profitably carried on in England, as the Jews will always give a high price for *live* carp. In fact, before the advent of Protestantism in England fish stews for the natural propagation of carp and other fish were very common. It is the custom in Germany to drain a pond every third year or so, let it dry, and plant oats in the ground; a heavy crop is the result, and the water being turned in again, the fish thrive wonderfully.

The *Tench* is another powerful and handsome pond fish which would well repay cultivation. It prefers stagnant and weedy waters. Like the carp and eel it buries itself in the mud in the cold months. Its food consists of larvæ, water plants, and worms. Like carp and all other muddy-flavoured fish, it eats well, and loses the muddy flavour if kept for a time in clear running water. It spawns from May to July on water plants, and the young fish hatch out in a week or ten days. The golden tench can also be easily bred in ponds.

The *Gudgeon*, *Minnow*, and *Bullhead* spawn from May to July, selecting very shallow streams, and depositing their eggs on the gravel and stones. These fish all form admirable food for *Salmonidæ*, and can be easily cultivated in any small clear stream. The male bullhead makes a sort of nest in the sand under stones, and, like the stickleback, drives away every intruder.

The *Roach*, *Rudd*, and *Bream* spawn in May or early in June on water weeds; the eggs hatch out in a week or ten days.

The *Chub* spawns at the end of April or beginning of May, on shallow sandy or gravelly places, and the eggs hatch out in a very short time.

The *Barbel* spawns in May and June on stones and gravel, in a sharp stream from one to three or more feet deep; the eggs hatch out in a week or ten days.

The *Dace* spawns in March or the beginning of April, also in sharp shallow streams.

The *Pope* or *Ruffe*, so esteemed as a table fish on the Continent, spawns in March and April, when it seeks the mouths of small streams to deposit its spawn on weeds and rushes.

Note.—It must be remembered that fish spawn earlier in mild open seasons than they do in cold seasons; in fact, a late cold spring will keep the fish back for weeks, or even in some cases for months.

ACCLIMATISATION OF FOREIGN FISHES.

We get such fine sea fish delivered at such a cheap rate, even in our most inland districts, that it is not likely it will ever pay to cultivate coarse fish for the market to any great extent—although the Jews would always take a certain amount. But this work considers fish chiefly from an angler's point of view, and the question is, what foreign coarse fish are worth introducing? There are only two that I should care to see introduced, viz., the pike-perch and the black bass, and they should *only be tried in such waters as will not support trout or grayling, or where it is undesirable to keep up a stock of our own coarse fish.*

The black bass—thanks chiefly to the great interest taken in it by the Marquis of Exeter—may be said to be acclimatised here already. There are many thousands of them now in the fine sheet of water called White-water, near Burghley House, Stamford, Lord Exeter's country seat. In 1878 and 1879, Mr. Silk, the able pisciculturist to the Marquis, brought over from the United States nearly one thousand young bass; and he informs me that the fish have spawned the last two or three seasons. Mr. Silk has since on two occasions been sent to the States to obtain a further supply of these fish, and they have been distributed among some half-dozen gentle-

men who had subscribed towards the expenses of getting them over. Having for some years past strongly advocated the introduction of this fine game and food fish into suitable English waters, I was, in common with others interested in this fish, extremely sorry to see, from the reports in the papers, that Mr. Goode, the United States Commissioner, had 'warned English anglers against the black bass.' I felt convinced that Mr. Goode did not intend to warn us against the introduction of this fish into *any* of our waters, but only such as were suitable for *Salmonidæ*. Knowing that an expression of opinion on this matter from so high an authority would have very great weight in this country, I wrote to Mr. Goode to ask him if he intended his remarks to apply to the introduction of the fish generally. His reply was exactly what I expected it would be; and I have very great pleasure in giving it, because it will do far more to remove any prejudice against the introduction of the black bass into *suitable* English waters than anything I can say. Mr. Goode says:—

Dear Mr. Marston,—I am much annoyed—with myself chiefly, for I ought to have expressed myself more explicitly—that my remarks upon the black bass were so misinterpreted. I was speaking solely in reference to planting black bass in salmon streams, and in comment upon Sir James Gibson Maitland's paper upon the culture of *Salmonidæ*. The entire drift of my remarks was to the effect that the black bass is a fish with which public fish-culture had nothing to do, being purely an angler's fish, and not one which professional fishermen can take in large quantities for the supply of the public markets. As an angler's fish I believe the black bass to be superior in every respect to any fish you have in Great Britain outside the salmon family, and I believe that its introduction into streams where pike, perch, roach, and bream are now the principal occupants, can do no possible harm, and would probably be a benefit to all anglers. It is also well suited for large ponds and small lakes, where there is an abundant supply of 'coarse fish,' which a school of them will soon convert into fish by no means 'coarse.' If you will kindly refer to my 'Game Fishes of the United States,' p. 12, you will find that my views as to the value of the black bass in my own country are already on record,

and I can see no reason why this fish should not be equally valuable in Great Britain. I quote from my own essay as follows :—

'Fish culturists have made many efforts to hatch the eggs of the black bass, but have never succeeded. . . . This failure is the less to be regretted since young bass may easily be transported from place to place in barrels of cool water, and when once introduced they soon multiply, if protected, to any desired number The first experiment in their transportation seems to have been that of Mr. S. T. Tisdale, of East Wareham, Massachusetts, who, in 1850, carried twenty-seven Large-mouths from Saratoga Lake, N.Y., to Agawam, Mass. The custom of stocking streams soon became popular, and, through private enterprise and the labour of State commissioners, nearly every available body of water in New England and the United States has been filled with these fish, and in 1877 they were successfully carried to the Pacific coast. This movement has not met with universal approval, for by the ill-advised enthusiasm of some of its advocates a number of trout and bream have been destroyed, and complaints are heard that the fisheries of certain rivers have been injured. The general results, however, have been very beneficial. The black bass will never become the food of the millions, as may be judged from the fact that New York market receives probably less than 60,000 lbs. annually ; yet hundreds of waters are now stocked with them in sufficient numbers to afford pleasant sport and considerable quantities of excellent food. "Valued as the brook-trout is for its game qualities," writes Mr. Hallock, "widely distributed as it is, and much extolled in song as it has been, the black bass has a wider range, and being common to both cold and warm waters, and to northern and southern climes, seems destined to become the leading game fish of America, and to take the place of the wild brook-trout, which vanishes like the aborigines before civilisation and settlements."'

I shall be very glad, then, if you will quote this letter as fully as your space will allow, in justice to the black bass and its advocates, as well as to myself.

I am, yours truly,

G. BROWN GOODE,
Commissioner.

As an enthusiastic angler for all kinds of fish, I should be the last to advocate the introduction of a fish which would spoil our sport. The black bass will take any kind of bait

freely, affords superb sport, and thrives best in just those waters which are not suited to trout and salmon, viz., ponds, lakes, and slow, deep streams.

I have taken this fish both with fly and worm, and I am convinced that weight for weight it has as much fight in it as any fish. If you use a fly, it should be a gaudy one, and the best plan is to sink it under water an inch or two, and draw it along.

As regards the pike-perch, I confess I have some doubts, he is rather *too* voracious; still he cannot be worse than the pike in this respect, and he is certainly a more 'game' fish, and better eating.

The question of acclimatisation of foreign *Salmonidæ* is doubtless touched upon in the chapter on that subject, but I am firmly of the opinion that no foreign waters can give us better fish of this kind than our own. The American *Salmo fontinalis*, or brook-trout, has been introduced freely into this country, but it has proved an utter failure, except when kept in confinement in ponds supplied by streams, and deep cold lakes. It is not a trout at all, but a true char. Placed in our rivers it will not breed, it rarely rises to the fly, and it gradually disappears—in fact, it is in no sense equal to our own *Salmo fario*, or common trout, than which I do not believe there is a better trout in the world.

R. B. MARSTON.

[In the above verdict it is probable that most fishermen and owners of angling waters will concur; and having thus been introduced by Mr. Marston to the Black Bass as the one foreign species which, under certain conditions, it is highly desirable we should attempt to acclimatise, I am glad to be able to supplement the information by the following notes on the practical cultivation of the fish, which have been most obligingly placed at my disposal for the present volume by the Marquis of Exeter, President of the National Fish Culture Association.—H. C.-P.]

THE REARING OF BLACK BASS

AND OTHER PISCICULTURAL EXPERIMENTS AT BURGHLEY HOUSE.

I have compiled the following notes on the rearing of Black Bass and my other experiments in pisciculture at Burghley, in compliance with a request made to me by Mr. Cholmondeley-Pennell, who thought that the experience obtained of practical fish hatching and rearing during the last twenty years might be of interest to fishermen and fishery owners.

Should they be so, I shall be pleased. I would premise, however, that my observations are offered rather as rough notes jotted down from time to time than as a finished or elaborate essay.

Some twelve or fourteen years ago, Frank Buckland, with whom I had been on terms of friendship for many years, came down to pay me a visit at Burghley, and he brought with him about two hundred trout ova in a pickle-bottle. The bottle containing the ova was hung to a tap over a sink in the Andromeda Hall on the west side of the house, and the water was allowed to trickle into it for about a month or five weeks, when the young trout began to hatch out. The water, though very pure, is exceedingly hard and cold, but the young fish appeared to do very fairly well.

This was my first successful effort at pisciculture, previous attempts having all resulted in failures.

Of course many of the fish hatched in the pickle-bottle died, but some were strong enough to resist all evils arising from my ignorance and mismanagement, and grew into healthy yearling

trout which were turned into a small pond in the park, where they lived for many years. After this I set up a small breeding establishment, consisting of slate-boxes arranged in staircase form, one above the other, with water laid on to run through them from top to bottom, over a bed of gravel. Buckland had introduced me to a Swiss-German Professor (De Vouga) who lived at Neufchâtel, and he for several years supplied me with large quantities of ova from his piscicultural establishment in Switzerland, and these I hatched and brought up in considerable numbers, turning the fish, as they grew strong enough to take care of themselves, into ponds in Burghley Park, and into a small lake a mile and a half from the house, named Whitewater.

All these trout (principally *Salmo ferox*) were hatched on the old system upon gravel, which I found to be very troublesome, and having discovered on trial that the ova hatched as well on the bare slate of the hatching-boxes, and required less cleansing and attention, the gravel was discarded altogether. My valet Deane (now Steward of the Conservative Club), whom I had taught how to attend to the fish-cultural establishment during my absence from home, suggested trying perforated zinc trays for holding the ova, so that they could be readily moved when the boxes required cleaning or the ova to be transferred to other water-runs in the conservatory where I hatched my fish. These trays I found to answer admirably, and the following year hatched some sixty or eighty thousand ova sent me from America by Sir Edward Thornton, who kindly obtained them from the United States Government Fish Cultural Establishment.

I here insert a letter to Mr. Frank Buckland, from *Land and Water*, 1874, with Deane's observations and notes on the treatment of trout ova ; also a letter from Deane answering some enquiries I had made to him the other day.

Fish Breeding at Burghley House, 1874.

Dear Buckland,—You will be glad to hear that I have just received a good remittance of ova from Mr. Robert Roosvelt, New

York, through the kindness of Sir Edward Thornton. The ova have arrived in first-rate order, and are safely deposited in my breeding-boxes. Four boxes contain the ova of the *Coregonus albus* (white-fish), four of *Salmo amethystus* (salmon-trout), and four of *Salmo fontinalis*. The ova of the white-fish seem to travel the least well of the three kinds, as there are many dead amongst them, while the other two sorts have arrived in perfect order. I could have some 'Black Bass' sent over but am afraid of them, as Mr. Roosvelt says that 'the Black Bass (*Grystes nigricans*) is a fighting American, and will swallow every British fish in your lakes. It is our champion fish, and it can whip all creation of the fish race.' After this description, I think that you will advise me to have nothing to do with such a devil, if I want to get up trout and *Salmo fontinalis* in my ponds. The fish hatched from eggs sent me by Sir Edward Thornton last year are doing very well, and are growing rapidly. They are principally salmon, white and big lake trout, with a few white-fish. I hatched a good number of the latter, but, unfortunately, lost most of them, through their escaping down the waste-pipe of the lower large tank. I had a guard of perforated zinc: but the little white-fish seem to work themselves through everything, and they got away, despite all my care and that of my servant, who is a very good hand at fish-hatching. The trout appear to grow rapidly; I have taken out several over one and two pounds weight this summer, while shifting my fish from one pond to another; and one trout was nearly three pounds in weight. These fish had only been hatched a year, or a year and a half at most.[1] Amongst them, I took out about one dozen very pretty fish, as bright as salmon, but different in form. They are broader than salmon, flatter in the sides, and the head is of a different form from either the above-mentioned fish or the trout. The scales were like salmon scales but rather coarser. I am sorry now that I did not take fuller particulars of the fish before turning them into the ponds, and I cannot get at them now. Not having seen a full-grown American white-fish, I am unable to say if these fish are the same; but not having had any white-fish spawn sent me the year before last, I do not think that my friends can be the *Coregonus albus*. Anyhow they are very handsome fish, and they came in the ova from the other side of the Atlantic, and were hatched in my boxes here.

I have no new discoveries to tell you of, but soon hope to find

[1] This must be an error, and must mean two or three years.

that the instructions you gave me in fish-hatching a few years ago will result in my having a large part of the lake at Burghley full of fine trout of various species. I have lately dammed off the part above the bridge, and after taking a crop of oats and seeds off, am now gravelling the bottom, after clearing out the mud.

Enclosed I send you the observations made by my valet (Deane), while attending to the hatching of the ova sent me from various parts.[1] The ova from Switzerland generally turn out well; but the sender should be more careful about the packing of the ova, which are often sent in too crowded a state.

Truly yours, EXETER.

Burghley House.

December 9th, 1873.—Arrived at Burghley per 'Cuba' from New York: Salmon-trout, brook-trout, and white-fish. The latter were mostly all dead, and very much clotted together. I think, perhaps, they were too thickly packed. The salmon-trout were much better, and the brook-trout stood the journey very well. Placed the ova in the boxes.

SALMON-TROUT.

15th. Ova commenced to hatch. Very few dead eggs among brook-trout. Most of the white-fish eggs dead.

21st. A good number of the salmon-trout hatched out.

28th. Most of the salmon-trout hatched. No brook-trout hatched. Eggs looking well, very few dead.

WHITE-FISH.—Not a good one to be seen.

Observations on the Treatment of Trout Ova.

The temperature of the water for the trout eggs should be from 40° to 45°. Anything above 50° is weakening; it will hatch them out sooner, but will increase the number of deaths.

The eggs from America are packed much better than those from Switzerland, and arrive in better condition, though they must be a longer time on the journey.

In placing the eggs in the troughs, equally distribute them over the gravel with a feather; and it is better, if possible, not to let them touch each other, as the bad ones soon contaminate the good, and they adhere to each other. The white eggs, or dead ones, should be taken out every morning. When I have missed a morning from want of time, I find more than double the number of dead eggs the next morning.

When they begin to come out of their shell, increase the supply of water. At first I used to have perforated zinc over the outflow of the troughs, to prevent the trout passing down into the lower troughs; but the zinc soon gets stopped up by the little things being drawn against it. Then the water flows over, taking with it the best fish. Let them have a free passage from the top trough to the bottom one. Do not put any eggs in the lower trough; then it

The Conservative Club,
25—3—85.

To the Marquis of Exeter.

My Lord,—I have the honour to acknowledge the receipt of your Lordship's letter of to-day's date, and beg to inclose herewith the extract from *Land and Water*, upon the 'Fish Breeding at Burghley House,' in which I found very much interest and pleasure, and was *very sorry* indeed when I had to give it up.

The perforated zinc linings to the troughs or trays were entirely my own idea, and they were made by Mr. Tillett, an ironmonger in Stamford. There were three principal reasons which led me to try the perforated tray; firstly, the necessity of doing something to cleanse the gravel which used to get such a quantity of sediment accumulated during the Hatching, and more especially during the feeding of the young fry; the food not eaten would lie among the gravel until it was bad, and a fungus would soon grow upon it, and would soon cling to any gravel, egg, or sickly little fish that happened to be near it, so that when I used to take it up, with the little pincers I had for the purpose, a whole bunch of

will be ready for the older fish as they come down, and ready to turn out into the brook or pond, when the umbilical sac is absorbed. Have a rose in the bottom trough.

When they were kept in troughs, and fed for several months, very few were reared; the percentage of deaths (from gill fever) being so large. But since I have turned them out as soon as they begin to feed, I have been more successful with them, and therefore should always turn them out if I had a brook or pond to turn them into, on the absorption of the navel-bag. Such places should be selected when the water is rather shallow, and not accessible to larger fish, and where there is a gravelly bottom, and with bushes or trees on the banks, which not only afford shade, but also attract numerous insects which are desirable for the fish.

In some of the ponds the fish require feeding as soon as they are turned in. Fish roe suspended in the water by a piece of string they are very fond of, and very soon leave nothing but the skin. The very small red worm is also good for them; they do not object to curds, and the flesh of frogs boiled and grated. By Midsummer they are large enough to take small maggots, of which they seem very fond. They feed best at early morn, and I always feed them at a given spot, and they are mostly on the look-out. In our pond I have some two or three years old (the American salmon-trout and the Swiss great lake trout), and there are some very fine fish among them, between two and three pounds each. In the summer I put a few hundred minnows in, and I now feed them about twice a week with beef and biscuits, and they come at it with a rush delightful to behold.

GEORGE DEANE.

clotted matter had accumulated in the gravel and scarcely seen; and which I felt must be very injurious to the whole fry, and I think was a great cause of the *gill fever* which used, for the first few years, to carry off so many of the young fry. Secondly, I wanted to allow the water to flow beneath as well as above both the ova and the fry. And thirdly, I wanted a better method in shifting the fry from one trough to another, while I cleansed it out thoroughly and let in fresh water, which the perforated trays enable me to do so quickly and without the least injury to the fry.

The first tray I had made answered very well, and your Lordship approved of it and gave me permission to order Mr. Tillett to make eight more, suggesting that the next should be made in a white metal, which would be purer than the zinc.

When I received your Lordship's first letter I could not recollect the year I had the first one made, so wired to Mr. Tillett to give me the date on which he made me the first trough. His answer I inclose.[1]

I was very much interested and got some useful hints on my visit to Huningue, in Lorraine, to which your Lordship so very kindly sent me, there they hatched out the ova on glass rods, just in a wooden frame about two inches from the bottom of trough, the glass rods the thickness of a slate pencil, and far enough apart to support the eggs without touching each other, and as the young fry began to hatch out they would soon riddle off on to the bottom of the trough, but there was no gravel, as soon as they began to feed they were turned out into small streams in the grounds beautifully arranged and adapted for them.

I think that it must have been after my visit there that I advised your Lordship to allow me to do away with the gravel in the troughs.

I have the honour to be, my Lord,

Your Lordship's most obedient and humble Servant,

GEORGE DEANE.

March, 1885.

[1] Sir,—I made one perforated zinc tray on the Thirtieth of October, 1873, and eight more trays January the Nineteenth, and eighteen tin metal trays June 1876.

T. TILLETT,
Ironmonger and Plumber,
Stamford.

Mr. George Deane.

Afterwards I continued to receive consignments of ova of *Salmo ferox*, *Salmo fontinalis*, and of other kinds of trout, from the American and Canadian Government establishments until five years ago, when, under the supervision of my new pisciculturist, Mr. Walter Silk, who came to me in December, 1876, on the recommendation of Frank Buckland, I had succeeded in rearing so many fish, and in having so many of a large size from which to obtain ova, that my fish-breeding establishment became self-supporting.

Under the able management of Mr. Silk, who had had several years' experience at a large fish-hatching and rearing establishment in America, improvements were introduced both into the hatching and rearing boxes (these obtained the medal and first prize at the International Fisheries Exhibition, South Kensington, in 1883), and in the feeding of the young fish, so that the Burghley fish-culture establishment has progressed immensely, and, as before mentioned, is quite self-supporting. I have from sixty to seventy female and twenty male fish, all hatched and reared at Burghley, varying between ¾ lb. and 7 lbs. in weight, which are kept in a pond and fed morning and evening through the year, so that the smaller fish are never in danger of being eaten by the larger ones. About the end of October each year the female fish are full of spawn, and ready to deposit their ova, the males being full of milt. The water is run off, so that the trout can be removed without injury, the ova is pressed from the females into basins, and then the milt from the male trout into the same basins. The milt and ova are then gently stirred together to impregnate the latter. After the ova has settled again at the bottom of the basins, the water is drained off, and the ova is poured out into trays made for the purpose, and taken away to the conservatory at Burghley to be laid on the zinc trays in the hatching-boxes. I may mention that these hatching-boxes are quite different from any I formerly used. They are an invention of Silk's. Each box is about twenty or twenty-five feet long, and a foot and a half wide. The water enters at

one end and runs through a system of perforated pipes underneath the zinc trays which contain the ova, passing out by waste-pipes for carrying off the surplus water. These boxes are all on a level, the old staircase arrangement having been long ago discarded. Under Silk's system the loss of ova during the hatching process has been reduced to a minimum. I think now, as a rule, we hatch something like 85,000 to 90,000 out of 100,000 ova, and the losses in the feeding-boxes are much less in proportion. Having been obliged to dry and clean out my trout lake fourteen months ago in consequence of an irruption of pike and perch, I have this year been able to turn in nearly 120,000 of 1884 fry, from which next year I hope for great results, as they will have become yearlings of about three inches or more in length. Silk has obtained prizes at the Norwich and the Fisheries exhibitions for both his hatching and feeding boxes. Through the kindness of some of my friends, the late Frank Popham of Littlecote, the late Lord Chesham and others, in allowing me to send down to their rivers at the spawning season, I have been enabled to hatch Kennet and Rickmansworth trout, and have now crosses of various kinds of trout in the different ponds at Burghley. I must also thank Mr. Popham and Lord Chesham for allowing me to continue occasionally to send down to their rivers for trout ova, and I am glad to know that the fry hatched at Burghley, which I sent back to the Kennet, seem to do better than fry hatched in that river in the natural way.

The best cross for the Burghley waters appears to be that between the American and the Kennet trout, as the fish grow rapidly and seem to do better than the others in every way.

With regard to the American Black Bass, Frank Buckland was very anxious to introduce it into this country, and spoke and wrote to me several times on the subject, urging me to make the experiment. He succeeded through a friend in getting a few of the fish over, but the cost was too great, and the risks to be run too numerous, to encourage him to repeat the experiment, and I believe that all this small lot of Black Bass died

after having been a few months in England. An idea of the cost of bringing Black Bass to England may be formed if I mention that Buckland offered me some of his fish (as he said very cheap) at thirty shillings a brace. These fish were not more than three or four inches long. As Buckland still wished me to try what I could do, I consulted Silk, and as we knew how useless it would be to try to get the spawn of the Black Bass over here with any chance of its arriving in a hatchable state (Black Bass spawn in June and July, when the weather is too hot for bringing ova from America, independent of other reasons), Silk suggested that he should make some tanks on a particular plan, and go over to America to see what he could do towards getting a number of fry over. He started at the end of September, 1879, and managed to bring back to Burghley about six or eight hundred fry averaging between three and six inches long. Of these, six hundred were turned into Whitewater, where they have thriven wonderfully, both in size and numbers. Silk has since made several successful excursions, bringing over for myself and friends considerable numbers of the small and large mouthed Black Bass. This year he has been unfortunate, owing to the ship having been caught in a heavy gale of wind, lasting for many days, so that the unfortunate fish were nearly all lost by being rolled out of the ship through the scuppers, or having their noses broken against the sides of the tanks.

My several importations of Black Bass into this country have been distributed amongst various lakes and ponds in England, including Sandringham, Rushden, Whitewater, and the rivers Welland and Nene. In Scotland the Duke of Argyll has turned into one of his lakes in Mull a considerable number of Black Bass which Silk brought over for him last year, and where they seem, from a specimen caught in a net, to have thriven very rapidly. I believe that the Black Bass will be a very valuable addition to all lakes, ponds, and rivers, where pike and perch abound, and where trout and salmon do not exist, as it is a very game fish when taken with either fly,

minnow, or worm, and fights to the last. There are none in Whitewater larger than three pounds in weight, but the Black Bass is said to attain a weight of ten or twelve pounds when the water and food suit him. He is an excellent fish for the table, with few bones, and flesh more like a whiting in taste than a freshwater fish.

I cannot, perhaps, better conclude these notes than by appending a short history of the Black Bass that I wrote for the Fish Culture Association, and also a letter of my pisciculturist, Mr. Walter Silk, on the subject of his breeding and feeding boxes, which I asked him to compile for me.

EXETER.

Burghley House: April 16, 1884.

Dear Mr. Chambers,—I have done the best I can to write you a description of the Black Bass, to which I have appended a sketch of the small-mouthed Black Bass (*Micropterus dolomica*, or *Micropterus Lacépède*), *La Perche du Canada.*

Scales moderate, in about sixty-five oblique rows between the head and caudal, and eight longitudinal ones between the back and lateral line, decreasing towards the nape, but more towards the throat. Head moderate in size, rather flat between the orbits. Mouth large, with underjaw projecting. Angle of mouth anterior to posterior border of the eye. Front dorsal fin has the spines decreasing slowly in length each way from the middle spine. These spines are very sharp. The anterior dorsal fin has about thirteen or fourteen soft rays. There are eight fins in all, viz. two dorsal, two pectoral, two ventral, one anal, and one caudal. The pectoral fins have sixteen soft rays, the anal has one or two sharp spines and eleven or twelve soft rays. The tail has seventeen or eighteen soft rays. The colour of this fish in the younger species is greenish-black or dark olive-green, darker on back, and shading to yellowish-white on belly and under side of lower jaw; more or less spotted when young, or marked with a number of dark blotches arranged in

a regular line from the shoulder to the caudal. Head dark at the top, whitish from under the eye, and on the lower half of jaw. These oblique irregular stripes run horizontally upon the cheeks. Upper fins dusky, lower fins of a yellowish-white. The stripes on the body gradually disappear as the fish grows older (though black spots remain upon the scales, looking like fine lines or stripes), leaving the fish's general colour to be a kind of dark olive-green, dark at the top, lighter, a kind of bright bronze green, in the middle of the sides, and pale olive softening down to yellowish-white in the lower parts of the belly. The Bass which I have endeavoured (very feebly) to represent in the drawing is *Micropterus dolomica* or *Lacépède* (the small-mouthed Black), the other true kind of Black Bass, viz. the large-mouthed Black Bass (*Micropterus salmonidas*), is quickly distinguished from the former by its enormous mouth as compared with the smaller fish, and from its colour generally being lighter in tint.

Both the large and small mouthed Black Bass are natives of Canada and the United States, and are found in most of the rivers and lakes of those two countries. These fish are very voracious, and will eat almost anything. A worm, a fly, a minnow, any fish not too large for him to swallow, liver, or frogs, all seem to be acceptable to the Black Bass. He is an excellent sporting fish when hooked, fighting most vigorously and requiring good tackle to land him when of a large size, and as the Black Bass is an exceedingly good fish to eat, tasting more like a whiting than anything else, I am sure that its introduction into the lakes, ponds, and rivers of those parts of the United Kingdom where pike, perch, and other common fish are indigenous, and where trout or salmon do not exist, will be most advantageous in all ways. I do not recommend anyone who is fortunate enough to have good trout or salmon fishing in his district or neighbourhood to import Black Bass, but where only common fish abound, I believe that our friend from the other side of the Atlantic will be found a valuable addition both for sport and for the dinner-table. The Black Bass is said to

attain to the weight of ten pounds and over but I have never seen any larger than four or five pounds, and these were stuffed specimens from Canada. In my own water near Burghley, I do not think that I have any larger than 2½ lbs. in weight, but the Black Bass have only been introduced into the lake some three years ago, though they are thriving well and have multiplied exceedingly.

The Black Bass spawns towards the end of May and during June as a rule, but I believe that this greatly depends upon the climate and the temperature of the water. The female deposits the ova at the bottom of the nest, which she has prepared by scooping out a hole in the gravel or mud in the bed of the lake, pond, or river. These nests are nearly circular in form, varying, according to the size of the fish, from one to two or three feet in diameter. 'The female lies on her side, and the male fish with his mouth presses out the ova by a series of what looks like "bites" along her belly. The male then ejects the milt over the ova from time to time, and the spawning process lasts for two or three days.'[1] The parent fish take the greatest care of the ova, and of their young when hatched, by swimming round the nests and keeping off all intruders, or anything which is likely to injure the young brood. When the young Black Bass are able to swim, one of the parent fish accompanies them. I have seen on a hot still day at Whitewater the old bass swimming leisurely about near the surface of the water, surrounded by her family of young bass, leading them in the same way that an old hen on land goes about with her chickens. The Bass in the winter-time appear to like lying at the bottom of the deepest parts of a pond or stream, and are therefore at that time of year very difficult to see, but as the warm weather comes on they begin to move about (mostly in shoals), when they will rise to a fly, or take a worm, minnow, or artificial bait freely. I think that the Black

[1] This I have taken from Major Arnold's Report, September 21, 1881, United States Fish Commission, as I have never seen the spawning process myself.

Bass prefers moderately still water to fast-running streams, as it is not migratory. In ponds which are confined, plenty of food in the shape of minnows, small fish of any sort, frogs, liver and crustacea should be supplied to the Black Bass, or they will eat up each other, and the owner of the pond will find in a short time his stock reduced to about half-a-dozen or so of large old bass, who will (particularly if males) fight it out with each other till one has the whole pond to himself.

I have done my best to describe the Black Bass as correctly as possible, but no doubt some of my observations are liable to correction.

Yours very truly,

EXETER.

W. Oldham Chambers, Esq.
Secretary to the
National Fish Culture Association.

Report from Mr. Walter Silk to the Marquis of Exeter.

My Lord,—As you desire, I have prepared the following account of the different methods of hatching the ova of *Salmonidæ*, their origin, advantages and disadvantages.

There are six methods of hatching the ova of *Salmonidæ*: the first five present more or less difficulties, which have led me to abandon them, and to make experiments suggested by my own experiences; these have resulted in the adoption of the present hatching-box now in use at Burghley House.

The first method used by Jacobi, a German, in 1763, was to place in wooden boxes, having wickerwork ends (the bottoms being covered with sand), any ova that might be obtained out of the gravel in brooks, where the trout had spawned. This sand was found to be too compact in its nature. Dom Pericloud, following in Jacobi's footsteps, first discovered the fact that the ova could be expressed from the female fish, and artificially fecundated by using the milt of the male. He covered the ova with gravel instead of sand, and this was found to answer

much better, but it had one serious drawback, as when any of the ova died they got covered with a fungous growth called Byssus, which communicated itself to all the healthy ova in its vicinity, thereby causing their death. The next step was to place the ova on the surface of the gravel. This was found to answer much better, but it had another drawback. It was found that dirt, the shells of the ova when the fry hatched out, dead fish, and Byssus, filled up more or less all the spaces in the gravel, making it very difficult to clean out, and causing serious mortality amongst the young fry. Another experiment was to remove the gravel and hatch the ova on the bare bottom of the trough or box. This was a further improvement, but it appeared that the ova having to lie on this surface from 50 to 100 days, according to the temperature of the water, some of them stuck there and died. The next step in advance was the invention of the grille. This was first used at Huningue about 1840. Livingstone Stone, of the United States, adopted this principle; Farnaby then brought it to this country, and used it at the Troutdale Fish Breeding Establishment, Keswick, Cumberland, and it has also been adopted by others in Scotland, though it has some very serious defects. The first is the loss of space taken-up by the frame which the glass bars rest in; the next is that dirt accumulates under the grille whilst the ova are hatching, so that when the fry burst the envelopes, and drop through the bars, everything goes with them. The consequence of this is that the space under the grille is filled with living and dead fish, the envelopes that came off the eggs, and the dirt that has accumulated during the hatching process. Another fault is the loss of a number of fry by getting under the frame of the grille. Of course all the ova do not hatch at the same time, so those that hatch first drop down through the bars of the grille to get out of the dirt and hide themselves; they get under the pieces of wood that form the sides and ends of the grille. Those that get in there first are all right for a time, but soon others keep hatching out and force themselves into this space behind the others, and so smother those farthest

in. Another serious objection is the manner in which the water escapes from the hatching apparatus, but of this I will speak hereafter. The next method is Major T. B. Ferguson's glass jars, the water coming in at the bottom. These are a decided improvement on the grille; they are cleaner, and the envelopes that come off the eggs can easily be taken out; but they all lack one most important feature—viz. the permitting of the water to flow out freely without injuring the fry or allowing any of them to escape.

In the Ferguson jars, as soon as the fish are hatched they commence to swim about, instead of rising and falling with the water. To prevent them from escaping altogether, and so being lost, the water is allowed to run through a cylindrical-shaped vessel made of fine wire gauze; when this gets crowded with fish it has to be emptied back again into the glass jar, or else the fry would smother each other, as they often do, even when well attended to. In the grille system the manner in which the water escapes is through a piece of fine wire gauze, placed across the end of the hatching-box. The wire is fixed perpendicularly with the bottom of the box; this causes the water to pass through the screen at right angles, with a considerable pressure on the screen; all weak fish getting drawn against this screen are killed, being unable to get away.

To prevent all this, I have invented my present hatching-box, which is as nearly as possible automatic. It is on the system of a boiling spring. The large-sized hatching boxes are twelve feet long by two feet six broad; on the bottom (inside) four half-inch pipes are placed, stopped at one end. The water is turned on, and holes are pricked in the pipes about two inches apart. When the box commences to fill, it has the appearance of boiling, the water being all in commotion. Three inches above the pipes trays are fixed, made of perforated zinc or wire gauze; these are three and a half inches deep by two feet long and one foot broad. The water is raised until it is two and a half inches deep in the trays, and it then runs out of the sides and ends of these trays by a channel that runs down each

side of the box. The ova being placed all over the bottom of the trays the water keeps it in a gentle motion, and any dirt that may be in the water is either passed off with the water or else settles at the bottom of the box, where it remains. Nothing now requires to be done but to take out any of the ova that may die. A week will often elapse without having to do this. As soon as the young fish are hatched out, the envelopes of the eggs commence floating about; the latter must be taken out with a small gauze net. Matters may now be left *in statu quo* for about six weeks, as the fish keep themselves clean by constantly swimming about, and if there is any dirt they rub it through the holes in the bottom of the tray.

The three great advantages pertaining to this plan are: first, the apparatus cannot overflow; secondly, no fish can escape or injure themselves; and thirdly, no dirt can accumulate where the ova or fish are. There is also another great advantage in the system, which is that, as compared with all other plans, it is very economical, simple in construction, and can be adapted anywhere.

BURGHLEY PARK: *July* 1884.

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